Cedar User Manual

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Chapter 1: Introduction To Cedar

What is Cedar?

Cedar is a software package for data acquisition and reporting. It is designed primarily for use with continuous emission monitoring systems (CEMS).

Cedar runs on a Microsoft Windows-based computer. The computer and software together are called a Data Acquisition System (DAS) or Data Acquisition and Handling System (DAHS).

Cedar is a product of Custom Instrumentation Services (CiSCO).

Cedar Applications

Cedar has these applications and Windows services.

Application	Description
Data Monitor	Displays real-time data, alarms, and graphs.
Data Editor	Allows users to view and edit data. Provides many utility functions.
Report Generator	Allows users to create, view, print, and save reports.
Backup Utility	Allows users to backup and restore data. This utility runs only on the DAS, and is not available on remote computers.
Database Utility	Allows users to extract (copy) and merge data. This utility runs only on the DAS, and is not available on remote computers.
Cedar I/O Service	Collects real-time data from the CEMS and other devices. Runs as a Windows service on the DAS. This service must be running for Cedar to collect data.
Cedar Data Recorder Service	Performs calculations on data, and stores the data in the databases. Runs as a Windows service on the DAS. This service must be running for Cedar to collect data.

By default, the Data Recorder Service runs under the Network Service account, and the Cedar I/O Service runs under the Local Service account. The services can be configured to run under other accounts.

Microsoft **SQL Server** is installed on the DAS computer. The SQL Server service must be running for Cedar to collect data.

Cedar Databases

Cedar uses Microsoft SQL Server as its database platform. Cedar defines five databases in SQL Server.

Database	Description
Cedar5Alarms	Stores alarm data.
Cedar5Config	Stores user settings and the facility-specific configuration.
Cedar5Data	Stores data that must be retained for a long period of time (several years). This typically includes 1-hour averages, 6-minute opacity, and all averages that are longer than 1 minute. Also stores QA data, such as daily calibration checks and quarterly linearity checks.
Cedar5DataShortTerm	Stores data that does not have to be retained for a long period of time. This typically includes 1-minute averages. Also stores I/O audit data.
Cedar5Realtime	Stores current data.

Data Points

Cedar's primary purpose is to acquire, store, and display data. Each data point may contain two pieces of information:

- The **value** is the numeric value of the data point.
- The **monitor code** indicates the validity of the data point.

The value and monitor code are stored together as a single data point.

Most parameters (tags) store both values and monitor codes. For example, a NOx ppm data point may have a value of 4.6 ppm, with a monitor code of 00 (Valid).

Operating time parameters (tags) only store values; they do not have monitor codes. The values represent hours as a decimal number. For example, 0.25 represents 15 minutes, 1.00 represents 60 minutes, and 24.00 represents a full day (24 hours).

Process codes are also stored as simple values, with no monitor codes.

Warning

Use caution when editing data. Values and Monitor Codes should only be edited when there is a sound technical basis for the change. Editing data without valid justification violates environmental regulations.

Monitor Codes

Monitor Codes indicate the validity of a data point. Every monitor code is in one of these three categories:

- **Valid**: the unit or process is operating and the data is valid.
- **Invalid**: the unit or process is operating and the data is *not* valid.
- **Offline**: the unit or process is not operating.

Cedar Monitor Codes

Monitor Code	Description	Validity
00	Normal	Valid
11	Pollutant analyzer out of control	Invalid
12	Diluent analyzer out of control	Invalid
13	Process offline	Offline
14	Calibration check	Invalid
15	Preventative maintenance	Invalid
16	Pollutant analyzer malfunction	Invalid
17	Diluent/ancillary analyzer malfunction	Invalid
18	DAHS malfunction (also used as the default monitor code for invalid values)	Invalid
19	Sample handling system malfunction (dryer fault, etc.)	Invalid
20	Corrective maintenance	Invalid
21	Other	Invalid
22	I/O communications problem	Invalid
23	Sample point not selected; process offline (used for	Offline

	timeshare systems)	
25	Backflush	Invalid
26	Value is calculated or derived from substituted data	Valid
27	ODBC data not available (data missing in an external database)	Invalid
28	Formula input out-of-range	Invalid
29	Calibration check; process offline	Offline
30	Sample point not selected (used for timeshare systems)	Invalid
31	Value out-of-range	Invalid
32	Value out-of-range; process offline	Offline
33	Data not QA (for example, 26 hours passed without a calibration check, or a linearity check is missing)	Invalid
34	Not sufficient data (used when there is insufficient data to create an average, but creating an invalid monitor code would be difficult or irrelevant. For example: subpart Da and Db 30-operating-day averages)	Invalid
35	Valid data, generated by Cedar. Measured value has been replaced with 200 % of Maximum Potential Concentration (MPC) or 200 % of full-scale range.	Valid
36	Valid data, generated by PLC or other non-Cedar source. Measured value has been replaced with 200 % of Maximum Potential Concentration (MPC) or 200 % of full-scale range. Typically used with HDR data.	Valid
37	Invalid data generated by PLC or other non-Cedar source. Typically used with HDR data.	Invalid
38	Valid Data, generated by PLC or other non-Cedar source. Typically used with HDR data.	Valid
39	Offline data, generated by PLC or other non-Cedar source. Typically used with HDR data.	Offline

40	Substituted Data: average of hour before and hour after	Valid
41	Substituted Data: average of X hours before and X hours after, where the missing data period is X hours	Valid
42	Substituted Data: max value in the previous 30 calendar days	Valid
43	Substituted Data: max value in the previous 365 calendar days	Valid
44	Substituted Data: max value since CEMS certification date	Valid
45	Substituted Data: other method	Valid
46	Substituted Data: 40CFR75 initial data substitution	Valid
47	Substituted Data: 40CFR75 90th percentile	Valid
48	Substituted Data: 40CFR75 95th percentile	Valid
49	Substituted Data: 40CFR75 maximum in lookback period	Valid
50	Substituted Data: 40CFR75 average of lookback period	Valid
51	Substituted Data: 40CFR75 maximum potential value	Valid

Note

Monitor codes 53-58, 62, 63, and 66 apply to the South Coast Air Quality Management District (SCAQMD) only.

53	Process offline (SCAQMD only)	Valid
54	Process offline; value below 5% of range replaced with zero (SCAQMD 2012 - NOx only)	Valid
55	Value below 10% of range (SCAQMD only)	Valid
56	Value below 10% of range; replaced with 10% of range	Valid

	(SCAQMD only)	
57	Value above 95% of range; replaced with 10% of next certified range (SCAQMD only)	Valid
58	Value above 95% of highest certified range (SCAQMD only)	Invalid
59	Invalid Data, flagged by user; this monitor code may not be affected when data points are rebuilt/recalculated	Invalid
60	Data is not applicable (N/A); used for special averaging requirements	Offline
61	Diluent cap used in formula	Valid
62	Process offline and CEMS in maintenance (SCAQMD only)	Invalid
63	Too many partial CEMS maintenance hours in day (SCAQMD 2012 - NOx only)	Invalid
64	CEMS in maintenance; process offline	Offline
65	Backflush; process offline	Offline
66	Value below 10% of range but is not fully quality assured; data will be valid once it is replaced with 10% of range and MC 56 (SCAQMD only)	Invalid
67	Sample not available (typically used with gas chromatograph data)	Invalid
68	Data is not applicable (N/A); used for special averaging requirements; may be redefined/renamed for site-specific requirements	Offline
70	Realtime data is unavailable	Invalid
71	Realtime data is expired/outdated	Invalid
72	Data does not exist in database	Invalid

73	Data does not exist in database (used for parameters that do not store monitor codes)	Valid

Process Codes

Process codes indicate the state of the unit or process relative to permit requirements and exemptions.

Typical Cedar Process Codes

Process Code	Description
01	Facility-specific
02	Facility-specific
03	Startup
04	Shutdown
05	Facility-specific
06	Facility-specific
07	Facility-specific
08	Normal (no special permit conditions are in effect)
09	Facility-specific
13	Process Offline

Process codes 01, 02, 05, 06, 07, and 09 are reserved for facility-specific permit requirements or exemptions. All process codes except 08 and 13 may be redefined for facility-specific requirements.

Alarm Categories

Cedar supports several alarm categories:

Category	Description
CEMS	Are related to emission monitoring equipment.
Limit	Are usually related to emission limits defined by the source's permit.
Status	Are usually informational status messages.
Communication (or Comm)	Are related to communication failures.
Backup	Are related to automatic daily database backup.
Config	Are related to user settings.
DAS	Are related to conditions that may affect how the DAS operates.
Security	Indicate changes to security settings within Cedar.

CEMS alarms

- Serious alarms alert you to conditions that may cause invalid data, such as a calibration check failure.
- Warning alarms alert you to other abnormal CEMS conditions, including CEMS maintenance.
- Info alarms display other informational messages such as whether a unit is online or a calibration check is in progress.

Limit alarms

- Serious alarms indicate that a permit limit has been exceeded.
- Warning alarms indicate that the unit could exceed a permit limit.

Alarm Severity Levels

Cedar alarms may have the following severity levels:

Severity	Description
Serious	Serious alarms Indicate a condition where a user probably needs to take action. For example, an analyzer failed a calibration check or a unit exceeded an emission limit.
Warning	Warning alarms indicate abnormal or undesirable conditions, or that the user may need to take action to prevent a potential problem. For example, a value may be above an alarm setpoint.
Info	Info alarms simply inform the user. For example, the daily automatic database backup completed successfully.
Log only	Log only alarms are for diagnostic purposes and do not appear in the alarm displays or reports.

Cedar5.ini File

The Cedar5.ini file contains basic information that Cedar needs to operate, such as folder paths and database connection strings. This file is usually located in C:\Program Files (x86)\Ciscocems\Cedar5. This file is configured when Cedar is installed, and is rarely modified.

Below are some of the entries in the INI file.

SiteID

This entry identifies the Cedar configuration. This is typically the name of the site. Facilities with multiple DAHS computers will have multiple configurations, each with a different Site ID. The Site ID is limited to 10 characters.

DahsComputerName

This is the name of the DAHS computer. Cedar uses this name to determine whether an application is running on the DAHS or a remote computer.

DahsDescription

This entry is optional and can provide a description of the DAHS.

Database connection strings

Cedar uses the database connection strings to connect to the Cedar databases. A full discussion of connection string options is beyond the scope of this manual.

Cedar uses the SQL Native Client from Microsoft for database access. The Provider value varies with the version of SQL Server.

SQL Server version	Provider value
SQL Server 2008	SQLNCLI10
SQL Server 2008 R2	SQLNCLI10
SQL Server 2012	SQLNCLI11
SQL Server 2014	SQLNCLI11

CedarDir

This is the main Cedar folder. Cedar creates additional subfolders in this folder.

LogsDir

Cedar creates log files in this folder. Cedar creates additional subfolders in this folder.

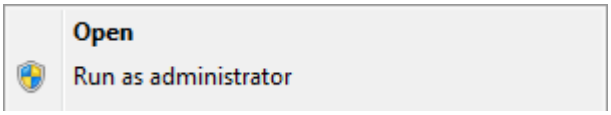
BackupDir

Cedar creates daily backup files in this folder. See the section on daily automatic backup for more details.

Administrative rights to modify Cedar5.ini

If Windows User Account Control (UAC) is enabled, administrative rights are required to modify files in the Program Files folder. Without administrative rights, you may view Cedar5.ini in Notepad, but you may not modify it.

To run Notepad with administrative rights, right-click on the Notepad icon, and click "Run as administrator".



Historical Data Retrieval (HDR)

For most CEMS where the CEMS PLC has been supplied by CiSCO, the PLC also functions as a data logger to store a limited number of data points. This historical backup data allows Cedar to acquire data for short periods when Cedar is not running. This is useful for DAS maintenance, such as software upgrades and system reboots.

Newer PLCs with large memory capacities store 1-minute data, usually for 7 days. Older PLCs with less memory may store 1-hour averages for up to 7 days. The actual amount of data stored varies with the system configuration.

The HDR process automatically runs every night shortly after midnight.

If the PLC provides 1-minute data, the HDR process also recalculates 1-hour averages.

The HDR process automatically rebuilds excess emissions and CEMS downtimes for the previous day.

Replacement conditions

HDR replaces existing data only when one or more of the following conditions are true:

- The existing value is Null and the existing monitor code is 18, 22, 70, 71, 72 or 73. This includes the case where the data does not exist in the database.
- The existing value is Null and the existing monitor code is valid.
- The existing data has monitor code 18, 22, 70, 71, 72 or 73, and the historical data is valid or offline.

HDR does not replace existing process code data in the database.

Chapter 2: Data Monitor

Overview

The Data Monitor displays real-time data, alarms, and graphs. You can perform these common functions in the Data Monitor.

- View/Acknowledge alarms
- View calibration checks
- Change facility-specific settings
- Select facility-specific windows
- Set application options
- Display giant numbers
- Display real-time graphs of data
- Display bar graphs
- Start/stop I/O audits

The Data Monitor also provides links to the Data Editor and the Report Generator.

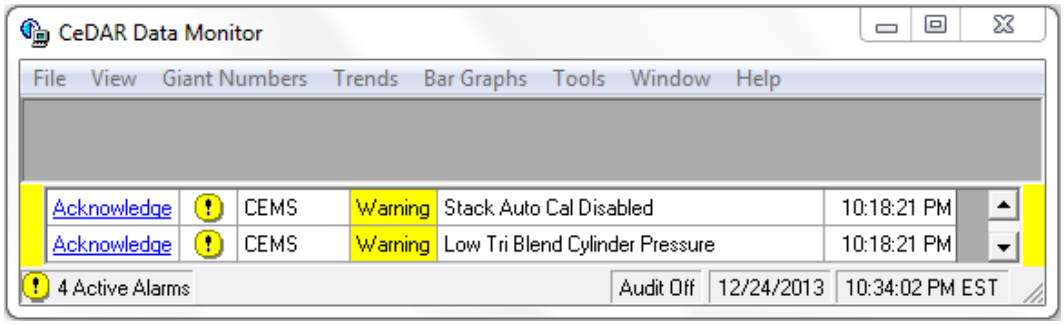
Data Monitor Alarms

The Data Monitor displays alarms several ways.

Alarm Banner

The most recent one or two alarms are displayed in the alarm banner at the bottom of the main Data Monitor window. Alarms disappear after they have been acknowledged and become inactive. The alarm banner updates twice per minute. Click the Acknowledge link to acknowledge an alarm.

The alarm banner can be enabled or disabled in the Options window.

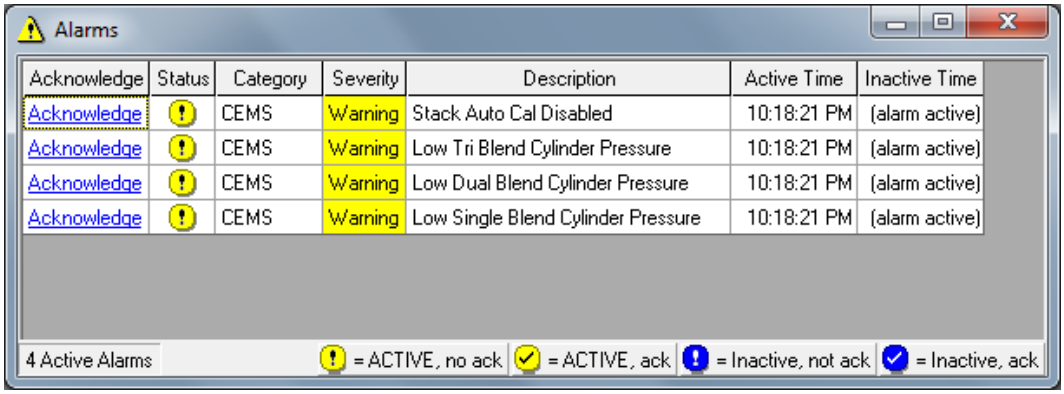


Alarm Window

All active and unacknowledged alarms are displayed in the alarm window. Warning alarms appear in yellow and Serious alarms are displayed in red.

To open the alarm window, you can:

- From the main Data Monitor menu, choose View > Alarms.
- Double-click the alarm count in the lower left corner of the main Data Monitor window.

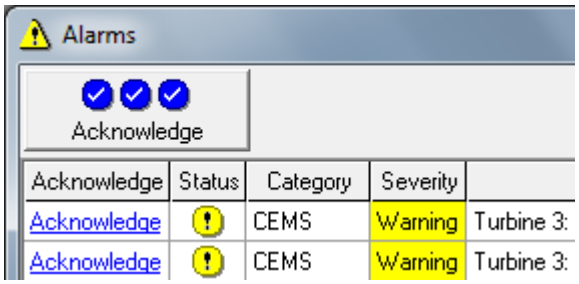


The legend at the bottom of the window indicates the possible alarm status states. There are four combinations of active/inactive and acknowledged/unacknowledged.

Acknowledge Alarms

Click the Acknowledge link next to an alarm to acknowledge it. Alarms disappear after they have been acknowledged and become inactive. The alarm window updates approximately twice per minute.

Optionally, all alarms can be acknowledged at once by clicking the Acknowledge button.



The Acknowledge button can be enabled in the Data Monitor Options window. Select the Alarms - Acknowledgement page. Uncheck the "user must acknowledge each alarm individually" box.

Alarm Window Popup

The alarm window can automatically pop up when a new alarm becomes active. This feature can be enabled or disabled in the Options window.

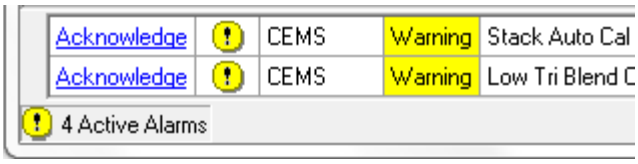
Flash

Portions of the Data Monitor windows flash when there is a new serious or warning alarm. The Data Monitor stops flashing once the new alarm has been acknowledged. Info alarms do not need to be acknowledged.

The flash colors are typically red for serious alarms, yellow for warning alarms, and magenta for communication alarms. The colors can be changed in the Options window.

Active Alarm Count

The status bar in the lower left corner of the main Data Monitor window displays the number of alarms that are currently active. In this example, the Data Monitor shows "4 Active Alarms".



Audible Sound

The Data Monitor can play a sound when there is an unacknowledged serious or warning alarm. The computer must have audio capability, and the audio must not be muted. The sound can be configured in the Options window.

Alarm Acknowledgement with Multiple Users or Computers

By default, alarm acknowledgement is specific to each user account. If multiple users are running the Data Monitor using different user accounts, then each user must acknowledge alarms. If one user acknowledges an alarm, that alarm is not acknowledged for the other users.

If multiple users run the Data Monitor using the same account, then an alarm acknowledgement is effective for all users sharing that account.

If you prefer that an acknowledgement by any user should acknowledge the alarm for all users, please contact CiSCO to modify your Cedar configuration.

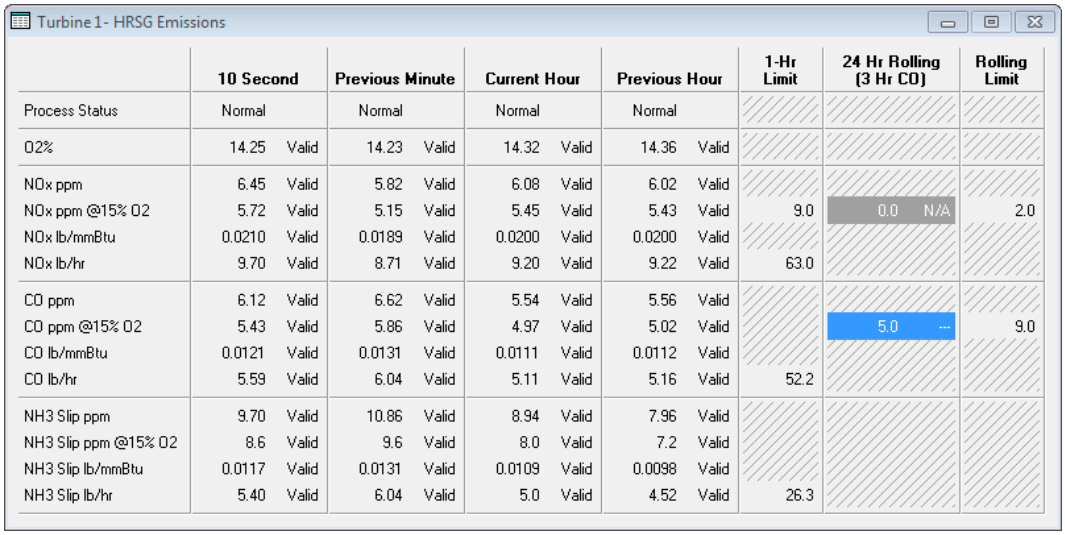
Cedar Data Recorder Service Restart

If the Cedar Data Recorder service is stopped and restarted, all active alarms are deactivated. The service may be stopped and restarted when the DAS reboots, or when a new version of Cedar is installed.

If the alarms are still active, the alarms will reappear.

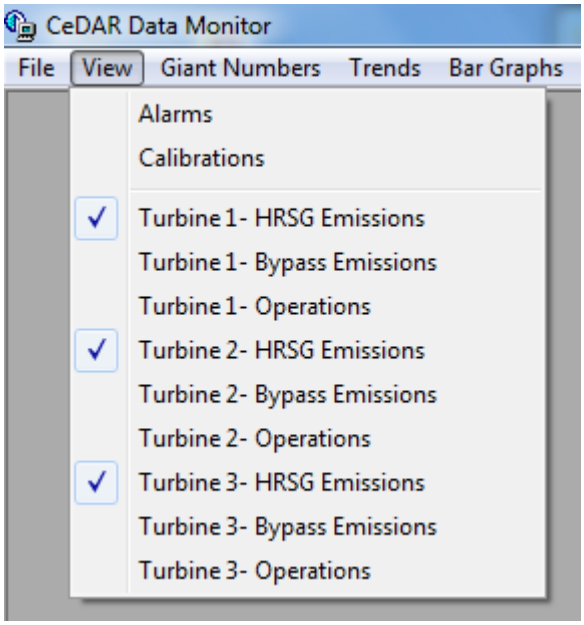
Data Monitor Facility-Specific Windows

Facility-specific windows are customized for your facility.



	10 Second		Previous Minute		Current Hour		Previous Hour		1-Hr Limit	24 Hr Rolling (3 Hr CO)	Rolling Limit
Process Status	Normal		Normal		Normal		Normal				
O2%	14.25	Valid	14.23	Valid	14.32	Valid	14.36	Valid			
NOx ppm	6.45	Valid	5.82	Valid	6.08	Valid	6.02	Valid			
NOx ppm @15% O2	5.72	Valid	5.15	Valid	5.45	Valid	5.43	Valid	9.0	0.0 N/A	2.0
NOx lb/mmBtu	0.0210	Valid	0.0189	Valid	0.0200	Valid	0.0200	Valid			
NOx lb/hr	9.70	Valid	8.71	Valid	9.20	Valid	9.22	Valid	63.0		
CO ppm	6.12	Valid	6.62	Valid	5.54	Valid	5.56	Valid			
CO ppm @15% O2	5.43	Valid	5.86	Valid	4.97	Valid	5.02	Valid		5.0 ---	9.0
CO lb/mmBtu	0.0121	Valid	0.0131	Valid	0.0111	Valid	0.0112	Valid			
CO lb/hr	5.59	Valid	6.04	Valid	5.11	Valid	5.16	Valid	52.2		
NH3 Slip ppm	9.70	Valid	10.86	Valid	8.94	Valid	7.96	Valid			
NH3 Slip ppm @15% O2	8.6	Valid	9.6	Valid	8.0	Valid	7.2	Valid			
NH3 Slip lb/mmBtu	0.0117	Valid	0.0131	Valid	0.0109	Valid	0.0098	Valid			
NH3 Slip lb/hr	5.40	Valid	6.04	Valid	5.0	Valid	4.52	Valid	26.3		

Facility-specific windows are available from the View menu.



Check marks indicate which windows are open, even if they are minimized or hidden. To view a hidden or minimized window, click View and the window you wish to see.

Data Monitor Giant Numbers

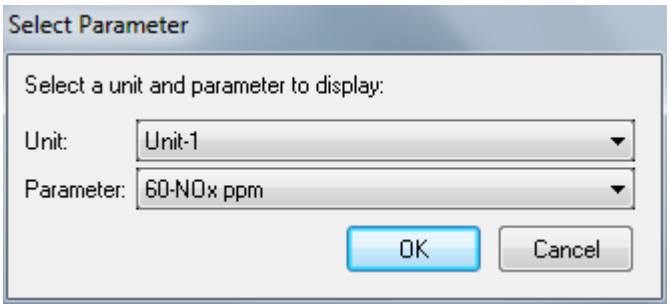
Giant number windows display the current values of your most critical parameters in a large format for quick and easy viewing. The giant number windows can be resized and repositioned anywhere on the desktop.

Giant number windows are available from the Giant Numbers menu in the Data Monitor main window.

Adding a Giant Number Window

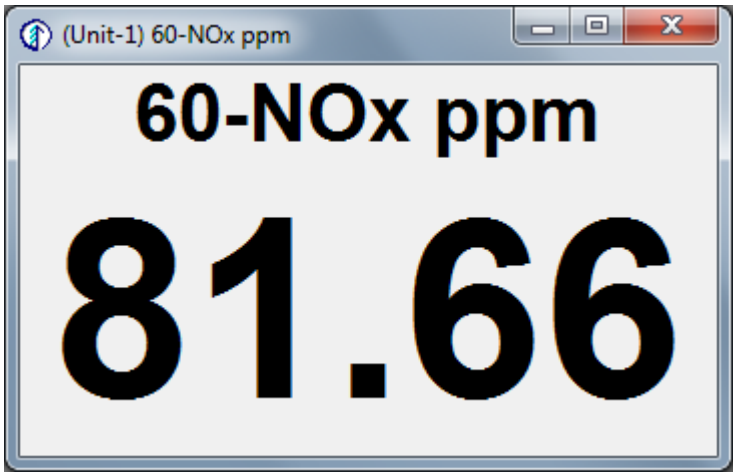
To add a new parameter to the list, click Giant Numbers > Add New.

The Select Parameter window appears.



Use the pull down menus to select the Unit and Parameter and click OK. A new giant number window appears.

Giant Number Display

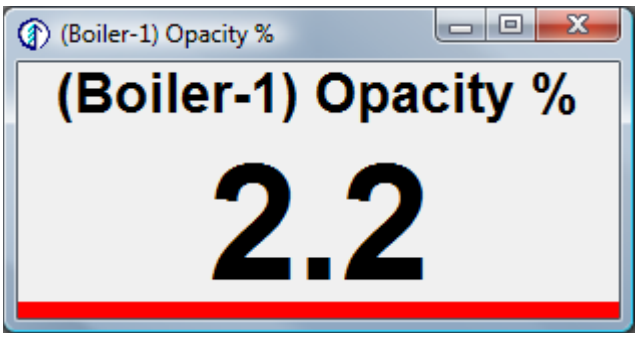


The parameter name and current value are displayed in a large window. The value refreshes every ten seconds. The window can be resized and repositioned as desired.

The background and text of giant numbers change according to whether the value is good, down or invalid.

Alarm Flash

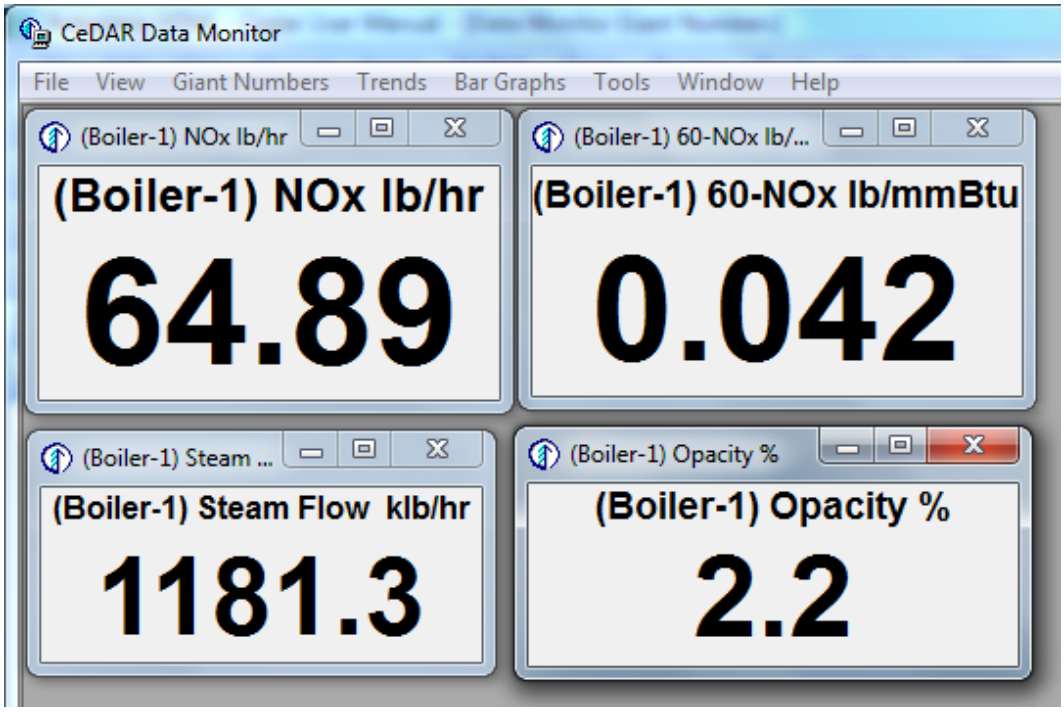
When there is an unacknowledged alarm, a bar at the bottom of each giant number window flashes with the appropriate color.



Bringing Giant Number Windows to the Front

When a Giant Number window is opened and you select a different window, the newly selected window may come in front. The Giant Number window may become hidden because it is behind the newly selected window.

To bring the Giant Number windows to the front again, click Giant Numbers > Bring to Front, or press Control+G on the keyboard.

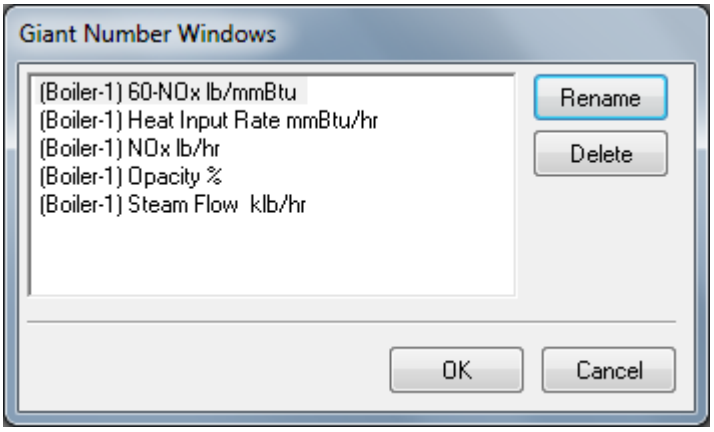


Any open Giant Numbers windows come to the front of any other windows. Any open trend windows and bar graph windows also come to the front. If you select a different window, the Giant Numbers may move behind the newly selected window again.

Renaming a Giant Number Window

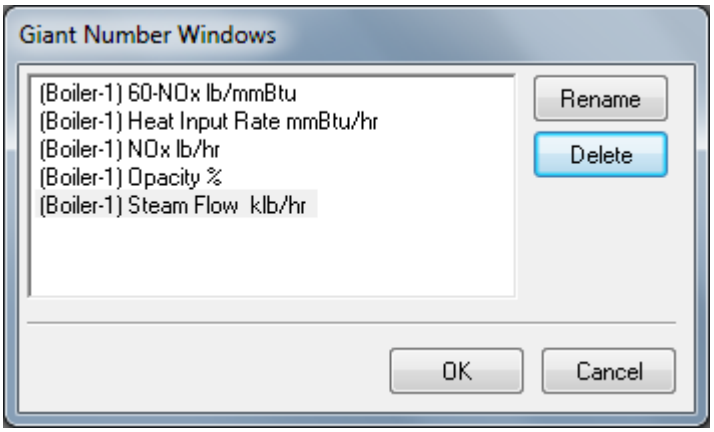
In the main Data Monitor window menu, click Giant Numbers > Rename/Delete.

A window lists all the giant number windows that have been created. Highlight the name of a giant number window in the list and click Rename. Type the new name and click OK.



Deleting a Giant Number Window

In the main Data Monitor window menu, click Giant Numbers > Rename/Delete. A window lists all the giant number windows that have been created.

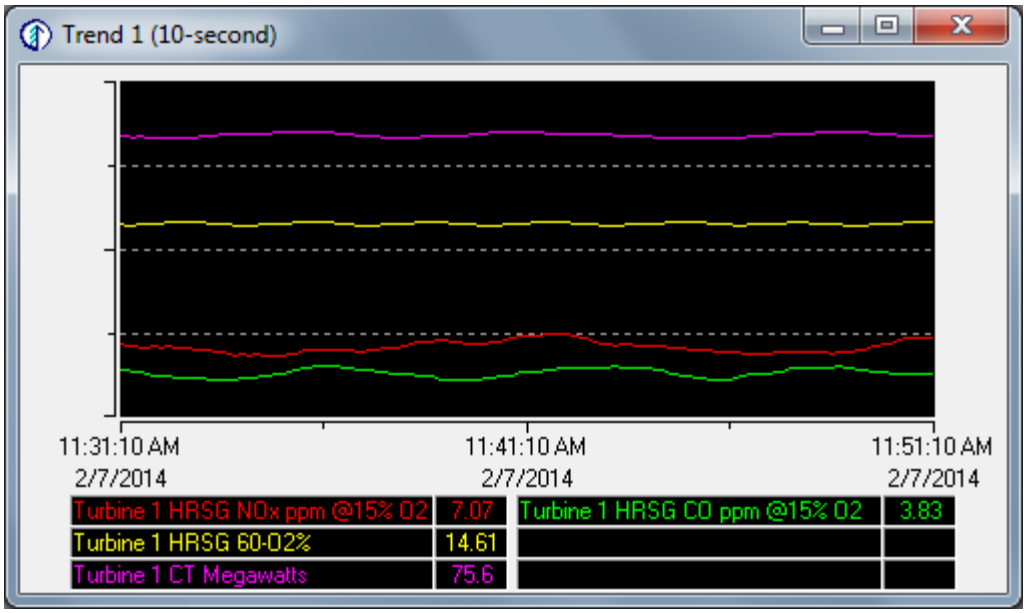


Highlight the name of the giant number window you want to remove and click Delete. The item disappears from the list, and is permanently deleted when you click OK. Click Cancel to exit this window without deleting any giant number windows.

Data Monitor Trends

Trending allows you to view current and recent data as a graph. Trends update at 10 second or 1 minute intervals.

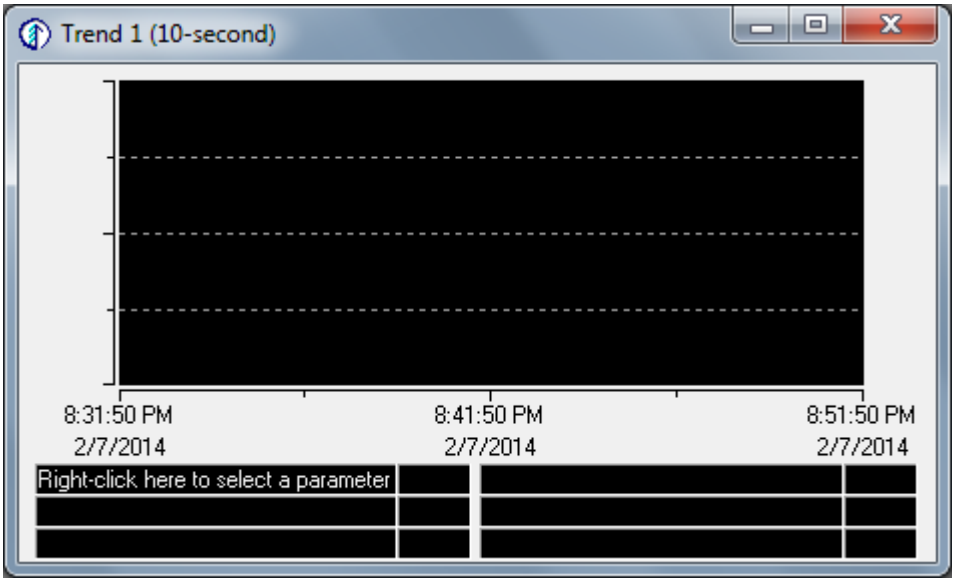
Trend windows are available from the Trends menu in the Data Monitor main window.



Adding a New Trend

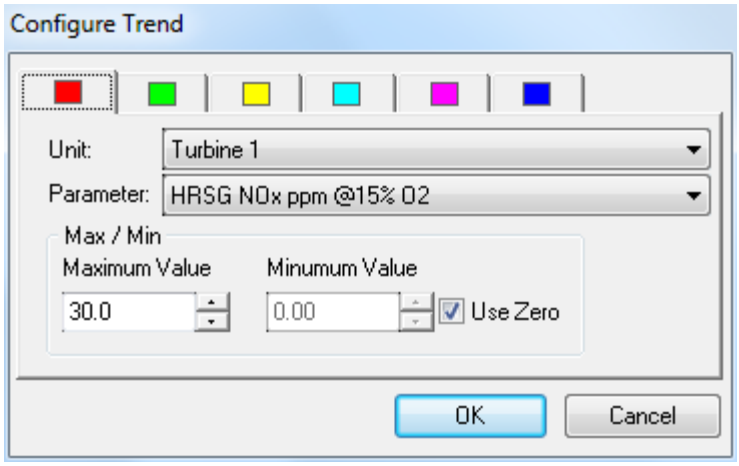
In the main Data Monitor window menu, click either Trends > Add New (10 second data) or Trends > Add New (1 minute data).

A blank trend window opens.



To add a parameter to the graph, right-click on the graph. Select Edit Graph from the drop down menu. The other menu options are disabled until you have placed a parameter on the graph.

The Configure Trend window appears. A trend can display up to six parameters. Each tab represents one parameter to display and its color.



Select the unit and parameter from the pull-down boxes. Enter a maximum value to use for scaling the values.

To add additional parameters, click on the other colored tabs.

Modifying a Trend

To modify a trend, right click on the graph. Select Edit Graph from the drop down menu.

Or, simply double-click on one of the six black boxes with parameter names.

Show/Hide Trend Scale

To show the numbers on the scale, click a parameter name. The scale on the left side of the graph displays the numbers corresponding to the scale of the selected parameter. The scale color matches the color of the selected parameter.

To see the scale of another parameter, click on the parameter name.

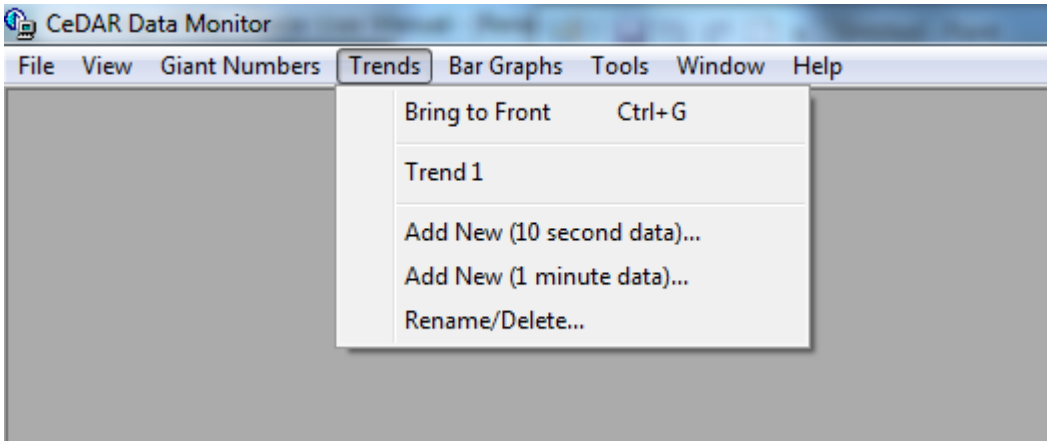
To hide the scale numbers, click the selected parameter again.

Resetting Trend Configuration

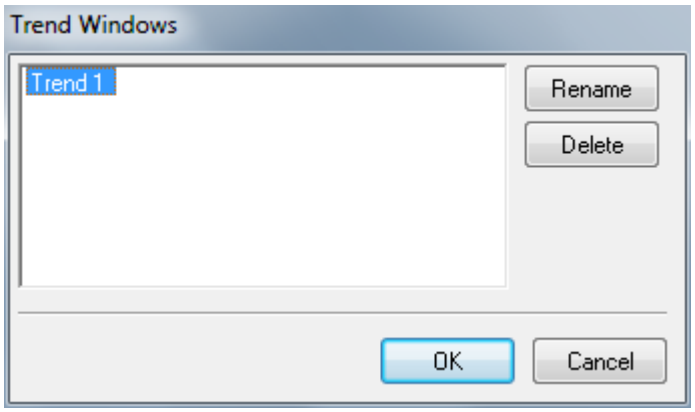
To complete erase all configuration for a trend, right click on one of the parameter names, and select Clear Graph from the pop-up menu.

Renaming a Trend

Cedar automatically names the trend windows as "Trend 1", "Trend 2", etc. To give a trend a descriptive name, click Trends > Rename/Delete.



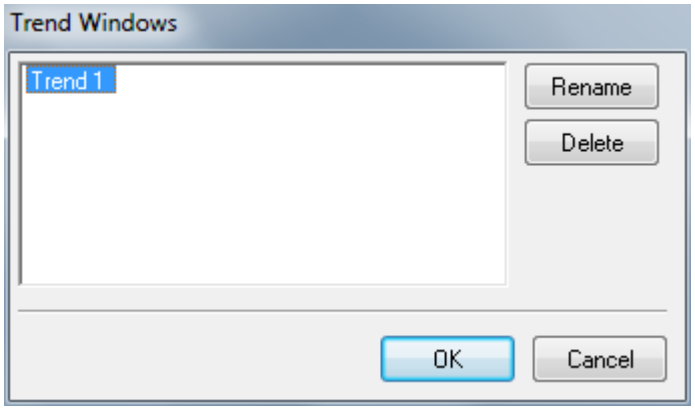
A window lists all the trend windows that have been created.



Highlight the name of a trend window in the list and click Rename. Type the new name and click OK.

Deleting a Trend

In the main Data Monitor window menu, click Trends > Rename/Delete.

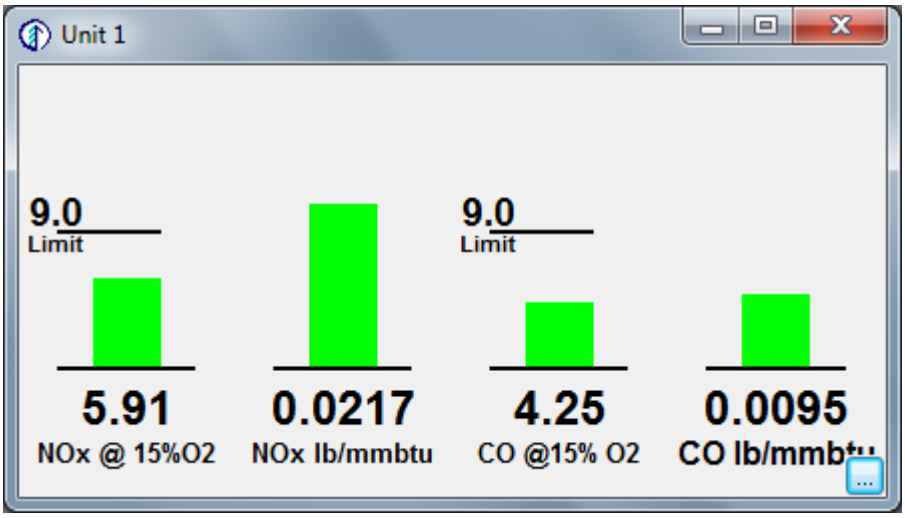


Highlight the name of the trend window you want to remove and click Delete. The item disappears from the list, and is permanently deleted when you click OK. Click Cancel to exit this window without deleting any trend windows.

Data Monitor Bar Graphs

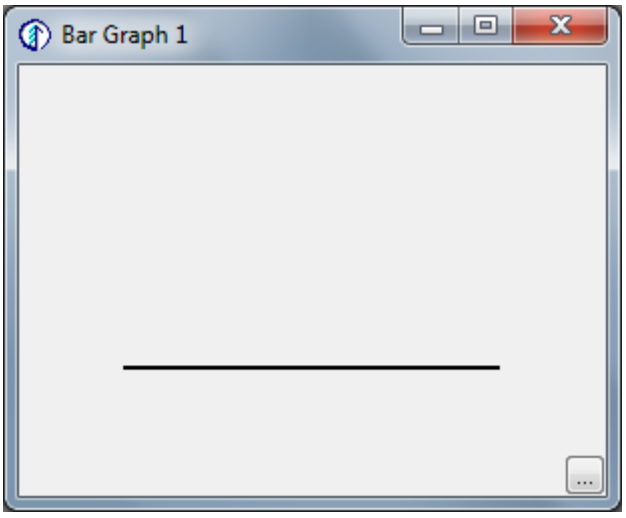
Bar graphs allow you to view current values, with optional lines to show emission limits.

Bar graph windows are available from the Bar Graphs menu in the Data Monitor main window.



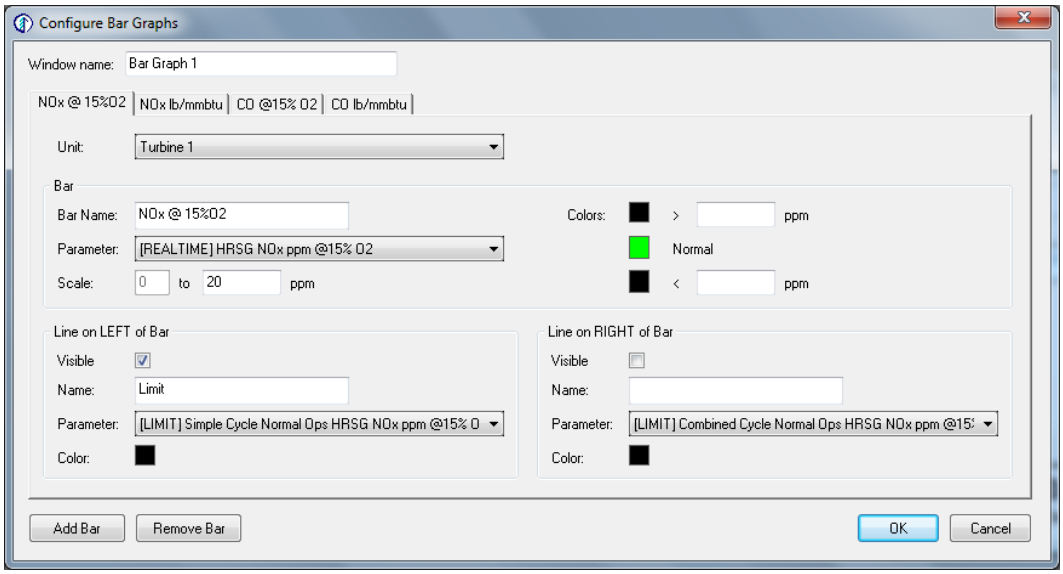
Adding a Bar Graph

In the main Data Monitor window menu, click Bar Graphs > Add New. A blank Bar Graph window opens.



Configuring a Bar Graph

Click the ... button in the lower right corner to configure the bar graph.



Window name

Enter a descriptive title for the bar graph window.

Unit** and **Parameter

Select the unit and parameter that you want to display in the bar graph.

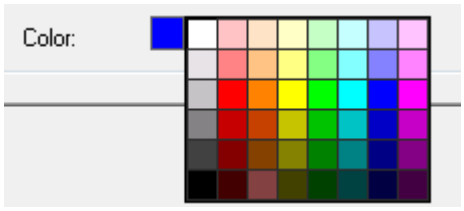
The parameter list includes both real-time values and one-minute values.

Enter the scale for the bar graph.

Colors

Three colors can be configured for the bar graph. The "normal" color is used when the value is between the upper and lower limits. The "high" color is displayed when the value is above the upper limit. The "low" color is used when the value is below the lower limit. If the "high" or "low" limit is blank, that color is not used. Also see the example below.

Click the colored boxes to change the colors.



Line to LEFT of bar

Check the Visible box to enable the bar graph to display a line to the left of the bar graph.

Enter a title (name) for the line.

Choose the parameter that provides the value for the line. This parameter list includes limits defined in the Cedar configuration.

Click the colored box to change the colors.

Line to RIGHT of bar

This option is the same as the "Line to LEFT of bar", except the line extends to the right of the bar graph instead of the left. Each bar may optionally have one or two lines displayed with it.

Adding another bar

Click the Add Bar button to add another bar to the window. Cedar allows a large number of bars in the window, but the text may become illegible if too many bars are added to one window.

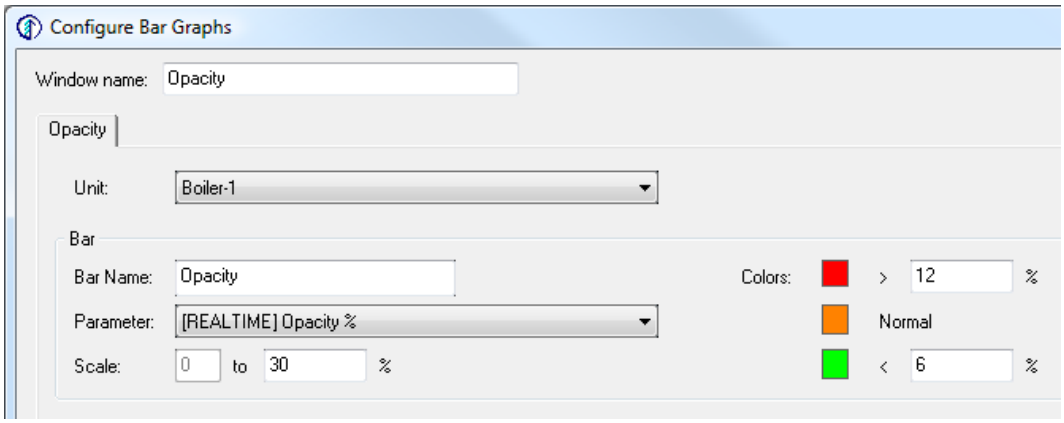
Removing a bar

To remove a bar from the window, select the tab for the bar to delete, and click the Remove Bar button.

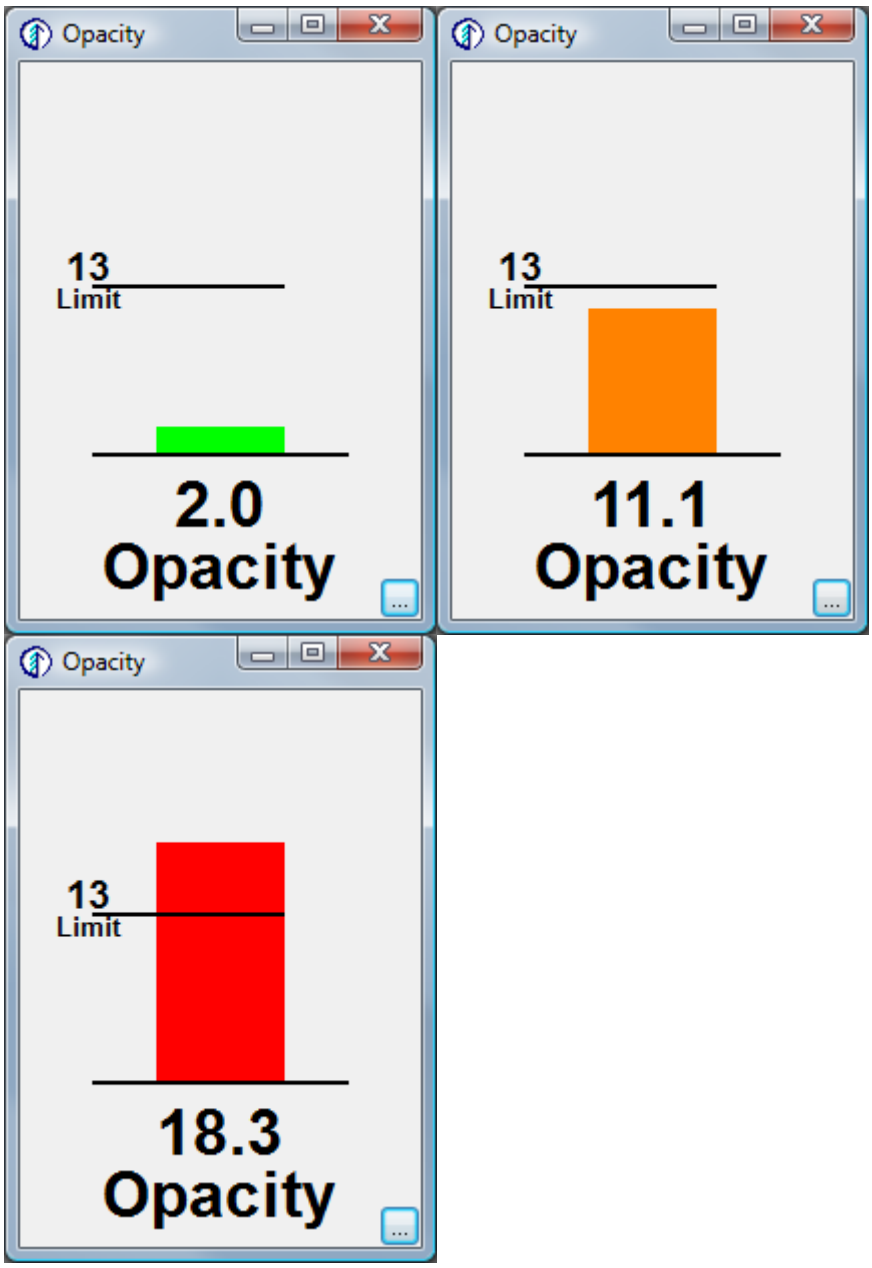
Color Example

The bar graph color can be configured to change with "normal", "high", and "high-high" conditions.

In this example, the "normal" color is green, the "high" color is orange, and the "high-high" color is red.

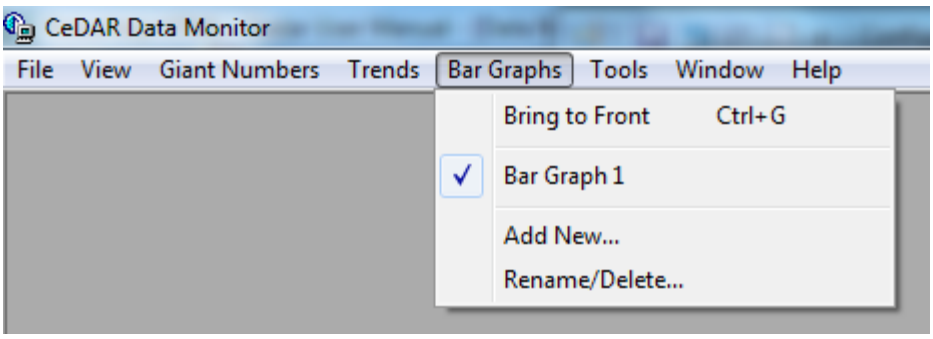


The bar graph color changes with the value.

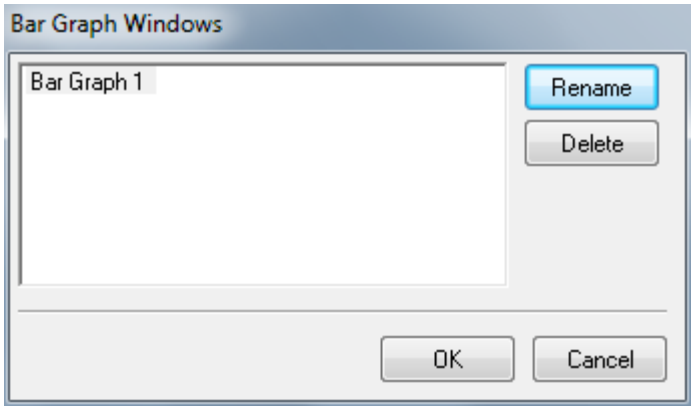


Renaming a Bar Graph Window

Cedar automatically names the bar graph windows as "Bar Graph 1", "Bar Graph 2", etc. To give a window a descriptive name, click Bar Graphs > Rename/Delete.



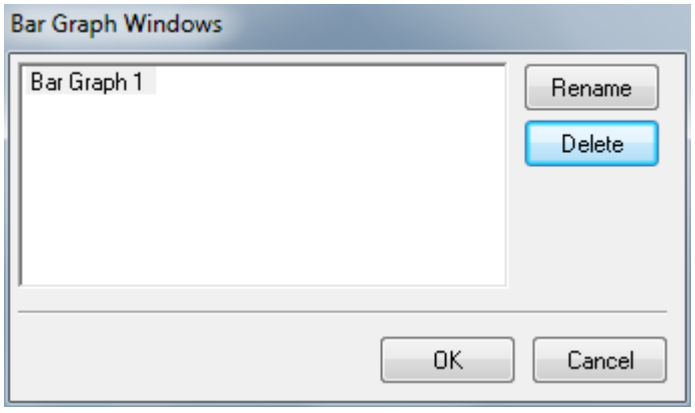
A window lists all the bar graph windows that have been created.



Highlight the name of a bar graph window in the list and click Rename. Type the new name and click OK.

Deleting a Bar Graph Window

In the main Data Monitor window menu, click Bar Graphs > Rename/Delete.

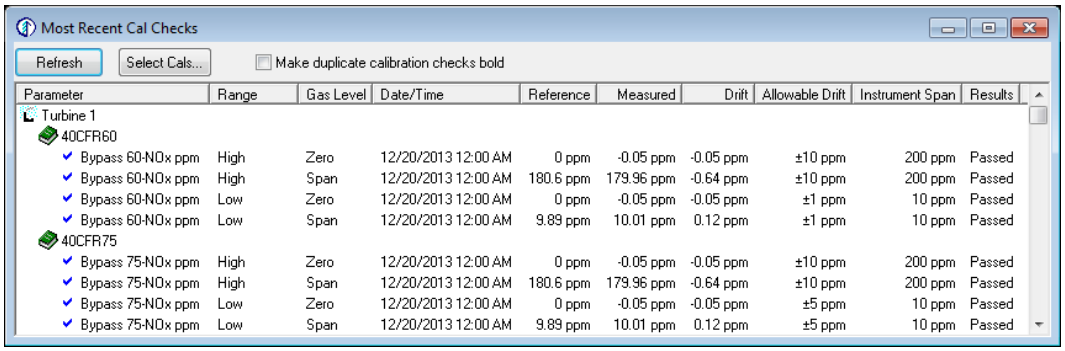


Highlight the name of the bar graph window you want to remove and click Delete. The item disappears from the list, and is permanently deleted when you click OK. Click Cancel to exit this window without deleting any bar graph windows.

Data Monitor Calibration Checks Window

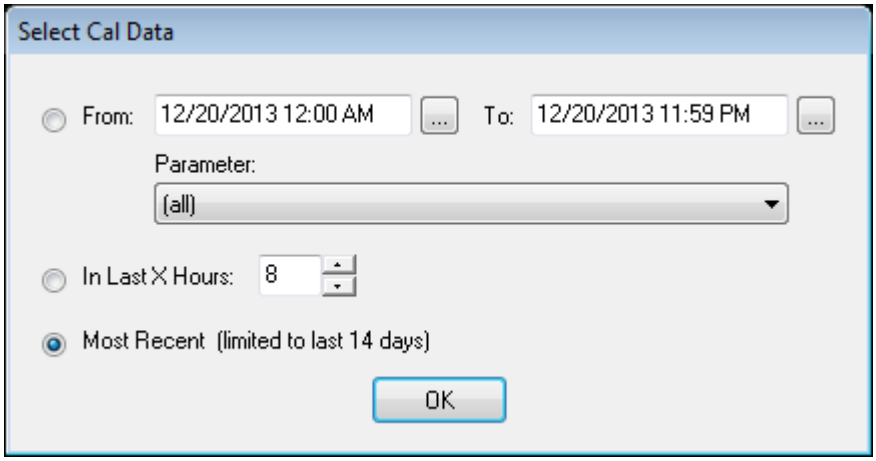
In this window, you can view recent CEMS calibration checks.

In the Data Monitor main window menu, click View > Calibrations. The Calibration Checks window appears.



Select Cals

Click the Select Cals button. The Select Cal Data window opens.



The following options are available:

- Enter the time period you wish to view. Select a specific parameter, or view all parameters.
- View all calibration checks in the last 1-72 hours.
- View most recent calibration checks (Cedar looks back up to 14 days).

Click OK to view the calibration checks.

The calibration checks are organized into groups by unit. Each unit is identified with the smokestack icon and the name of the unit.

Units are divided into sections by regulations. The book icon is used to depict regulation type followed by the name of the regulation such as 40CFR60 or 40CFR75.

Each line displays the results of the calibrations for each parameter calibrated.

A blue check mark on the left edge indicates a passed calibration. A red “X” indicates a failed calibration. The Results column gives a more detailed explanation of the fail status.

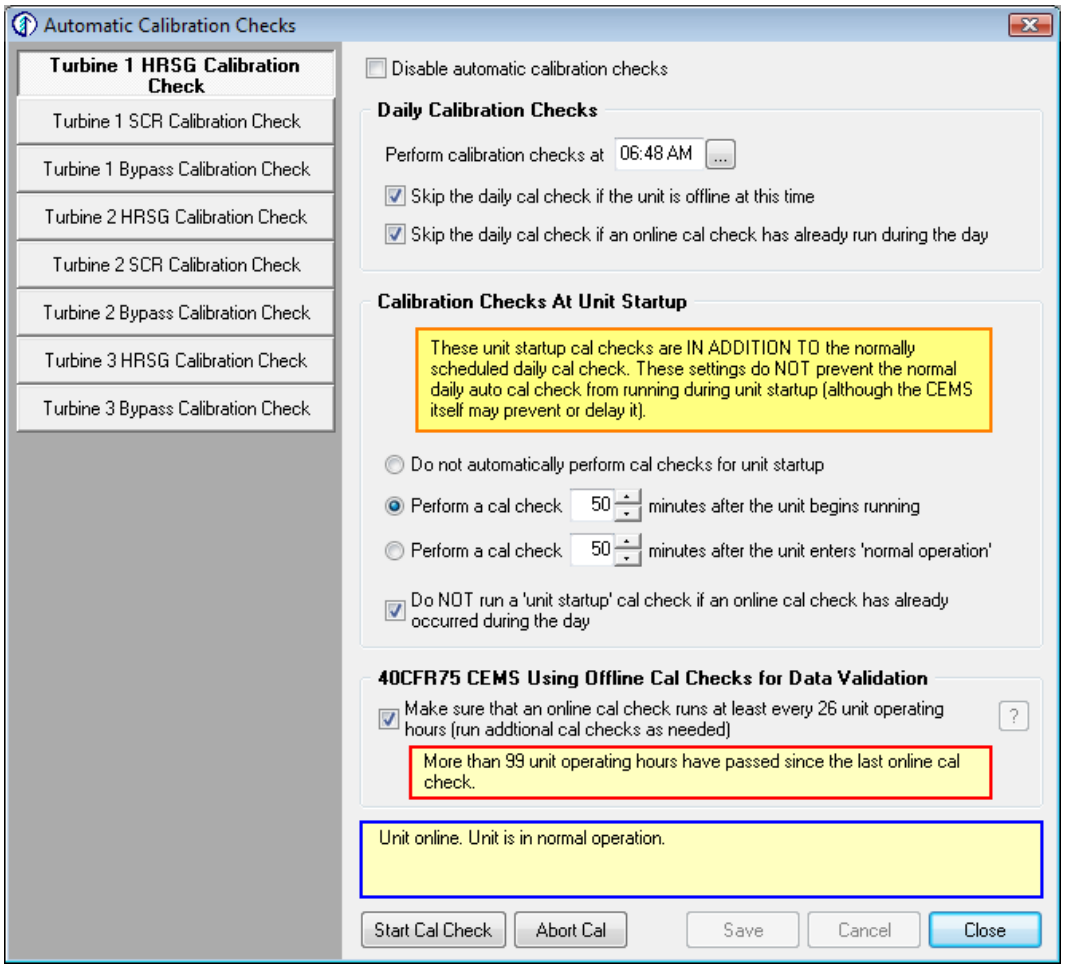
Auto Calibration Checks

In the Data Monitor main window menu, click Tools > Auto Calibration Checks.

This feature is available if it has been configured for your facility.

The CEMS automatically runs calibration checks at the same time every day. This window provides additional options for when calibration checks should be run.

See suggested configurations for this window.



Calibration checks are configured separately for each sample train. The left pane allows you to select each sample train. When you make a change in the right pane, the buttons in the left pane are disabled until you click either Save or Cancel.

Disable automatic calibration checks

Check this box to disable all automatic calibration checks in the CEMS.

Daily Calibration Checks

Perform calibration checks at (time)

This is the normal time when the CEMS runs a calibration check every day.

Skip the daily cal check if the unit is offline at this time

If this box is checked, Cedar will skip the daily calibration check if the unit is offline at the normal daily cal time. Approximately 10 minutes before the normal daily cal time, Cedar checks whether the unit is offline. Cedar skips the calibration check by temporarily adding one hour to the normal cal time setting, and then changing it back after the normal daily cal time has passed.

Note

If the unit starts operating after Cedar has decided to skip the daily calibration check but before the normal daily cal time, Cedar may not be able to prevent the calibration check from being skipped even though the unit is online.

Skip the daily cal check if an online cal check has already run during the day

If this box is checked, Cedar will skip the daily calibration check if online calibration checks have already been performed earlier in the day for all analyzers in the sample train. This feature is intended to minimize unnecessary online calibration checks.

Approximately 10 minutes before the normal daily cal time, Cedar checks whether online calibration checks have already been performed for the day. Cedar skips the calibration check by temporarily adding one hour to the normal cal time, and then changing it back after the normal daily cal time has passed.

Calibration Checks At Unit Startup

These options may be used to start calibration checks after the unit begins operating.

Note

These settings do not prevent the CEMS from performing a calibration check at the normal cal start time.

(For example, if the unit is in startup at the normal cal start time, most CEMS will start a cal check. Some CEMS have logic to prevent cals from running while the unit is starting up, or to delay a cal check until the unit is in normal operation.)

Please contact CiSCO if you need your CEMS to prevent auto calibration checks while the unit is starting.

Do not automatically perform cal checks for unit startup

If this option is selected, Cedar will not start any additional calibration checks following unit startup.

Perform a cal check (x) minutes after the unit begins running

If this option is selected, Cedar will start a calibration check after the unit begins running. You can configure the delay period. The delay is calculated from the time the unit begins running.

If the unit stops running, Cedar will not cancel the calibration check if it has already started. If the unit stops running near the end of the delay period, Cedar may not be able to prevent the calibration check from starting.

Perform a cal check (x) minutes after the unit enters 'normal operation'

If this option is selected, Cedar will start a calibration check after the unit completes startup and enters "normal operation". The definition of "normal operation" is specific to the unit. You can configure the delay period. The delay is calculated from the time the unit enters "normal operation".

If the unit stops running, Cedar will not cancel the calibration check if it has already started. If the unit stops running near the end of the delay period, Cedar may not be able to prevent the calibration check from starting.

Do NOT run a 'unit startup' cal check if an online cal check has already occurred during the day

If this box is checked, Cedar will skip the unit startup calibration check if online calibration checks have already been performed earlier in the day for all analyzers in the sample train. This option generally makes Cedar run a calibration check for only the first startup in a day.

40CFR75 CEMS Using Offline Cal Checks For Data Validation

Regulatory overview

This option is for use with CEMS that have passed an "offline calibration demonstration" (40 CFR 75 Appendix B, section 2.1.1.2). This provision allows the CEMS to use a combination of online and offline calibration checks to validate data (40 CFR 75 Appendix B, section 2.1.5, and additional provisions in the Part 75 Policy Manual). For an hour to be valid, both of these requirements must be met:

1. The CEMS must have passed a calibration check (online or offline) within the previous 26 clock hours (the current hour counts as one of the 26 hours). If the CEMS failed a calibration check, it is out-of-control until it passes a calibration check.

2. The CEMS must have passed an online calibration check within the previous 26 "unit operating hours".

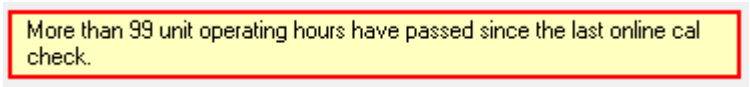
Keep these points in mind:

- An hour is considered a "unit operating hour" if the unit operates for any portion of the hour.
- The hour in which the most recent online calibration check completed is considered the first hour of the 26 "unit operating hours" allowed.
- If a CEMS fails an *online* calibration check, it is out-of-control until it passes an *online* calibration check.

Cedar operation

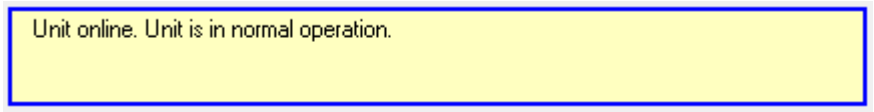
When the box is checked, Cedar tracks the number of unit operating hours that have passed since the most recent online calibration check. Cedar will start a calibration check if the unit is online and the number of unit operating hours is greater than 25.

The box below the checkbox indicates the number of unit operating hours since the most recent online calibration check. The border turns red when the number of unit operating hours is greater than 26.



Status Indicator

The box at the bottom of the window displays the current status of this feature. It indicates whether the unit is operating, and whether Cedar is preparing to start a calibration check.



Buttons

Start Cal Check *and* ***Abort Cal***

Click these buttons to start a calibration check, or abort a calibration check that is currently running. These buttons are available if they have been configured for your CEMS.

Save *and* ***Cancel***

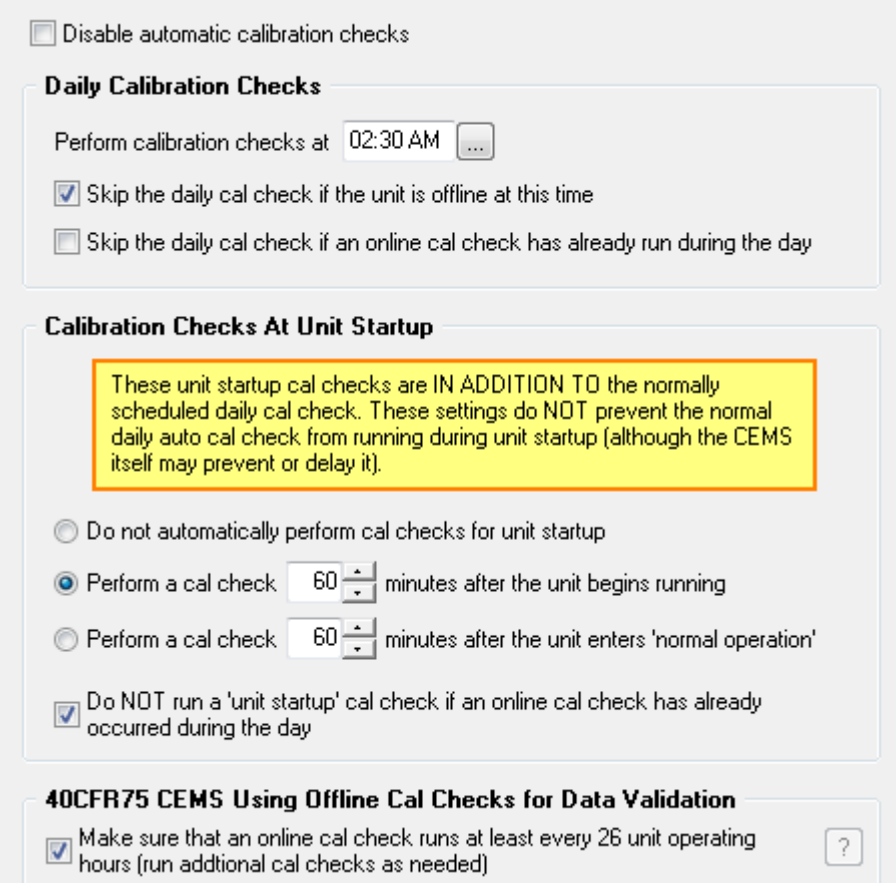
After making any changes in this window, click one of these buttons to save or cancel the changes. When you make a change in the right pane of this window, the buttons in the left pane are disabled until you click either Save or Cancel.

Auto Calibration Checks - Suggested Configurations

This section describes suggested configurations for daily automatic calibration checks.

Unit with irregular operating schedule

This configuration is for a unit that operates on an unpredictable schedule but generally does not run in the early morning hours.



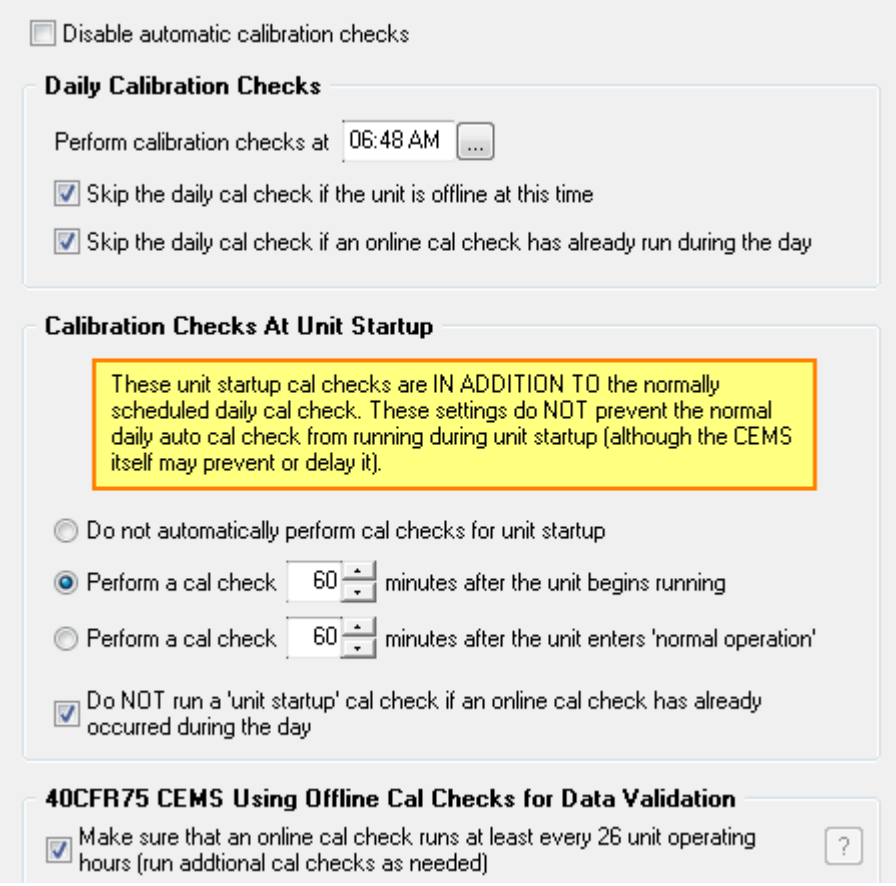
The configuration is:

- Set the daily cal start time early in the morning, before the unit is expected to run.
- Check the box for "Skip the daily cal check if the unit is offline at this time".
- Select either "Perform a cal check (x) minutes after the unit begins running" or "Perform a cal check (x) minutes after the unit enters 'normal operation'".

- Check the box for "Do NOT run a 'unit startup' cal check if an online cal check has already occurred during the day".
- If the CEMS is subject to Part 75 and has passed on offline calibration error demonstration, check the "40CFR75 CEMS Using Offline Cal Checks For Data Validation" box.

Unit with regular operating schedule

This configuration is for a base-loaded unit (operates 24 hours a day), or for a unit that typically starts running about the same time each day. The suggested configuration for a "unit with irregular operating schedule" (see above) is acceptable. Alternatively, this configuration may be used.



Selecting the daily cal start time is the most important aspect of this configuration.

- Set the daily cal start time at a convenient time when the unit is usually in normal operation.

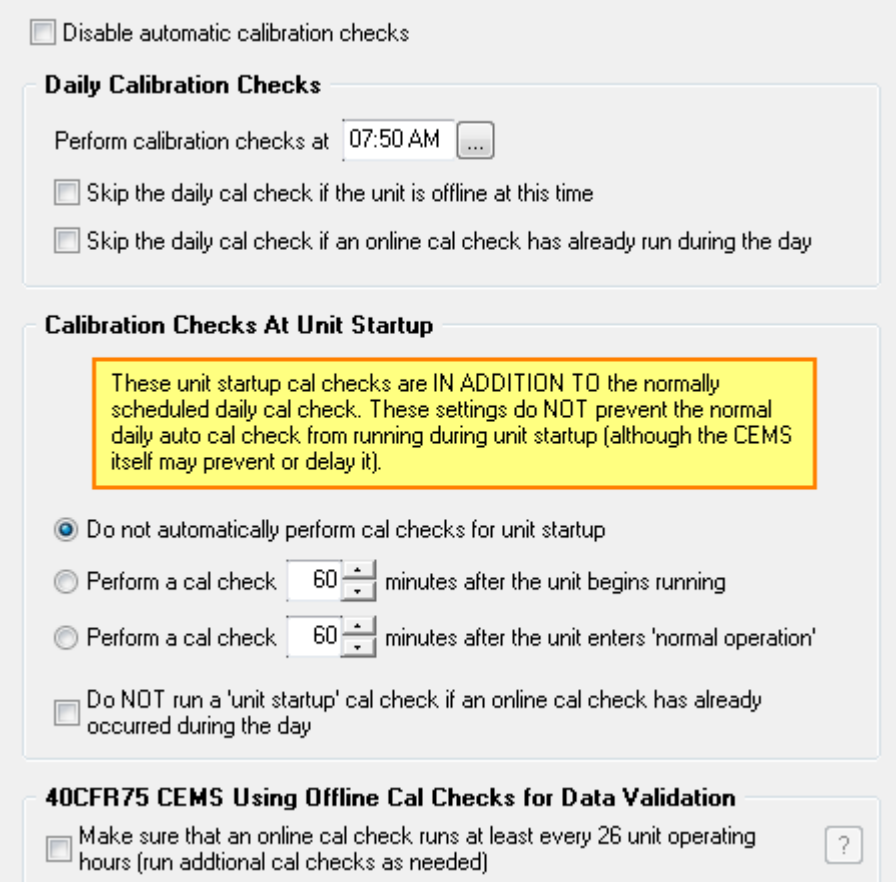
The additional options below are useful for instances when the unit deviates from its typical operating schedule.

- Check the box for "Skip the daily cal check if the unit is offline at this time".
- Select either "Perform a cal check (x) minutes after the unit begins running" or "Perform a cal check (x) minutes after the unit enters 'normal operation'".
- Check the box for "Do NOT run a 'unit startup' cal check if an online cal check has already occurred during the day".
- If the CEMS is subject to Part 75 and has passed on offline calibration error demonstration, check the "40CFR75 CEMS Using Offline Cal Checks For Data Validation" box.

Simple configuration

This configuration will perform a calibration check at the same time each day, whether the unit is operating or not. Cedar will not start any additional calibration checks.

If this configuration is used, the unit operator or CEMS technician may need to manually start additional calibration checks to meet the daily QA requirements.



The configuration is:

- Set the daily cal start time to a convenient time when the unit is usually in normal operation.
- Uncheck the box for "Skip the daily cal check if the unit is offline at this time".
- Uncheck the box for "Skip the daily cal check if an online cal check has already run during the day".
- Select either "Do not automatically perform cal checks for unit startup".
- Uncheck the box for "Do NOT run a 'unit startup' cal check if an online cal check has already occurred during the day".
- Uncheck the "40CFR75 CEMS Using Offline Cal Checks For Data Validation" box.

Data Validation for 40 CFR 75 Calibration Checks

Online calibration checks

Part 75 generally requires that calibration checks are performed when the unit is online. Offline calibration checks cannot be used to validate data unless the CEMS has passed an "offline calibration demonstration".

Prospective data validation

When the CEMS passes a calibration check, the data is prospectively validated for the next 26 clock hours. The hour in which the calibration completes is considered the first hour of the 26 hour period. After 26 hours, the validation period expires, and the data is invalid until another calibration check is passed.

Calibration check failure

When a CEMS fails a calibration check, the CEMS is out-of-control from that time forward and the data is invalid. When the CEMS passes a calibration check, it is in-control again and the data is valid with respect to the calibration check requirements.

When a CEMS fails a calibration check, all data prior to the completion of the failed calibration check, and in the same hour that the calibration completed, is invalid. For example, a calibration check begins at 8:30 and ends at 8:55. The CEMS fails the calibration check. The data is invalid beginning at 8:00. Data prior to 8:00 is not affected by the 8:55 calibration check.

8-Hour startup grace period

A startup grace period may apply to the calibration check requirement when a unit begins operating. There are two requirements to qualify for the startup grace period:

1. The unit must have begun operating after being offline for at least one entire clock hour. (For example, a unit begins operating at 5:20. To qualify for the startup grace period, the unit must have been offline from 4:00 to 5:00.)
2. The CEMS must have passed the most recent online calibration check within 26 clock hours of the hour in which the unit ceased operating. For example, a unit ceases operating at 10:15 on Day 2. To qualify for the startup grace period when the unit starts up again, the unit must have passed an online calibration check between 9:00 on Day 1 and 10:15 on Day 2.

If both conditions are met, then an 8-hour grace period applies, starting with the first hour in which the unit resumes operating. Data is considered valid during the startup grace period.

Only one 8-hour startup grace period is allowed per outage. If the unit starts up, stops operating, and starts up again, the 8-hour startup grace period begins with the first startup. The grace period does not begin again for the second startup.

Dual-range analyzers

When *either* range of a dual-range analyzer fails a calibration check, *both* ranges are out-of-control (invalid) until *both* ranges have successfully passed a calibration check. (See 40 CFR 75 Appendix B, section 2.1.5.1(3).)

A passed-but-expired calibration check on one range does not affect the validation status of the other range. For example, if the high range passed its most recent calibration check but more than 26 hours have passed, and the low range is up-to-date on its calibration requirement, then data from the low range is considered valid.

Regulation references

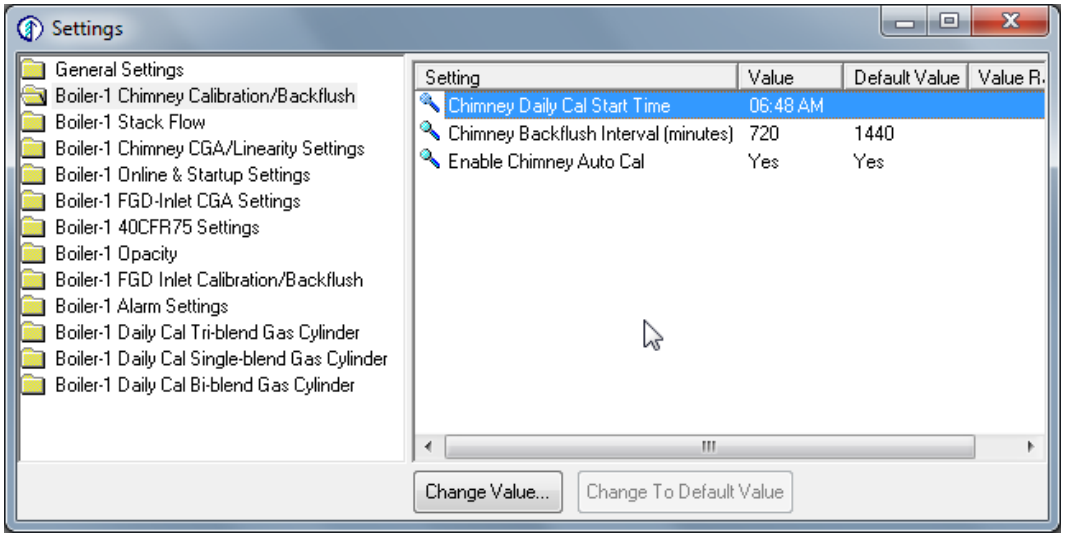
The requirements for data validation with respect to calibration checks are found in 40 CFR 75 Appendix B, sections 2.1.1 and 2.1.5. The Part 75 Policy Manual contains additional clarifications and examples.

Data Monitor Settings

Settings are values that are specific to your facility. Settings may include daily calibration start times, fuel density settings for gas and/or oil, bias factors, on-line setpoints for fuel, water, and steam flows, and backflush intervals.

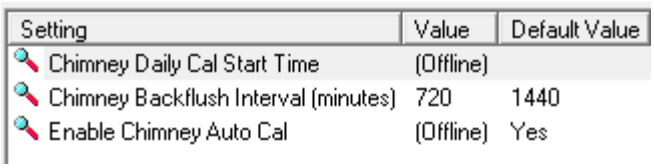
Settings Window

In the Data Monitor main window menu, click Tools > Settings. The Settings window opens.



Settings are organized into groups in the left side of the window. The settings and their associated values are listed in the right side of the window.

Settings with a red magnifying glass icon cannot be changed. A lock near the icon indicates that the setting is locked. This can occur if the setting is password protected, or if the Settings window is offline. If Cedar is unable to communicate with the CEMS, the value reads "Offline".



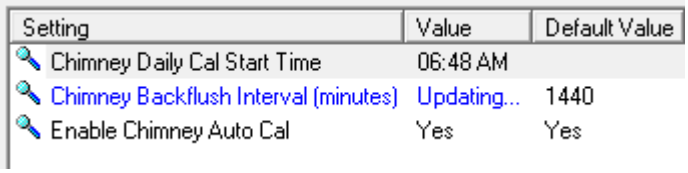
Changing a Setting

To change a setting, select the setting group on the left side of the window, and then select the setting in the list on the right side of the window.

If there is a default value and you want to change the setting to this default value, click Change to Default.

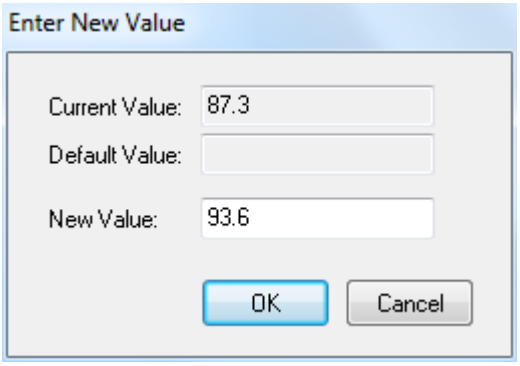
To enter a new value, click Change Value, or double-click on the setting in the list.

After you enter a new value, the list displays "Updating" until the new value has been saved.



Changing a Numeric Setting

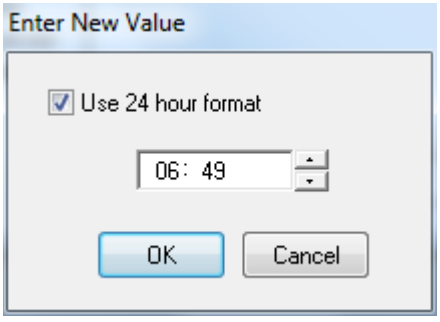
If the setting is a numeric value, the following window appears:



Enter the new value and click OK.

Changing a Time Setting

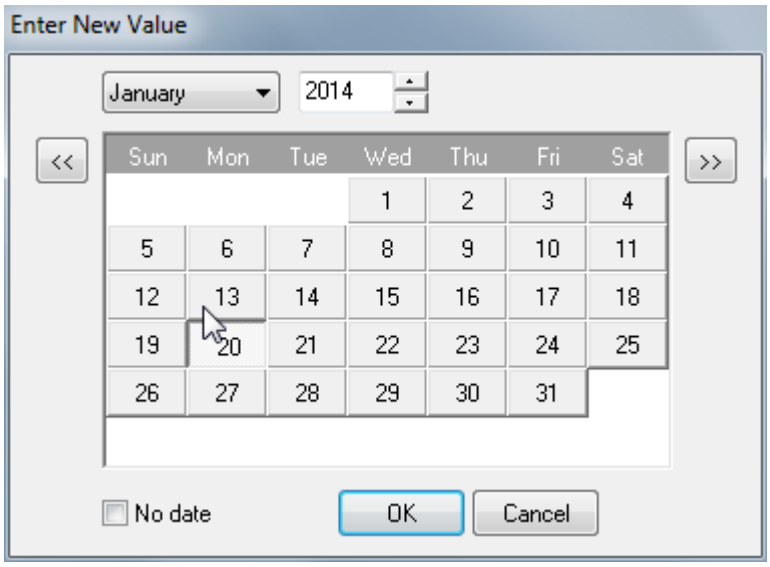
If you are changing a time value, the following window appears:



Check the Use 24-Hour Format box if you prefer to enter the time in 24-hour format instead of 12-hour format. Enter the new time and click OK.

Changing a Date Setting

If you are changing a date value, the following window appears:

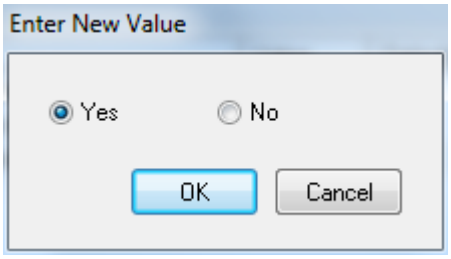


Check the "No date" box if the setting should not have any date at all.

Enter the new time and click OK.

Changing a Yes/No or True/False Setting

If you are changing a Yes/No or On/Off value and the current value is Null, the following window appears.



Select the appropriate option and click OK.

If the current value is already Yes, No, True, or False, then the value will simply toggle when you click Change Value.

Data Monitor I/O Auditing

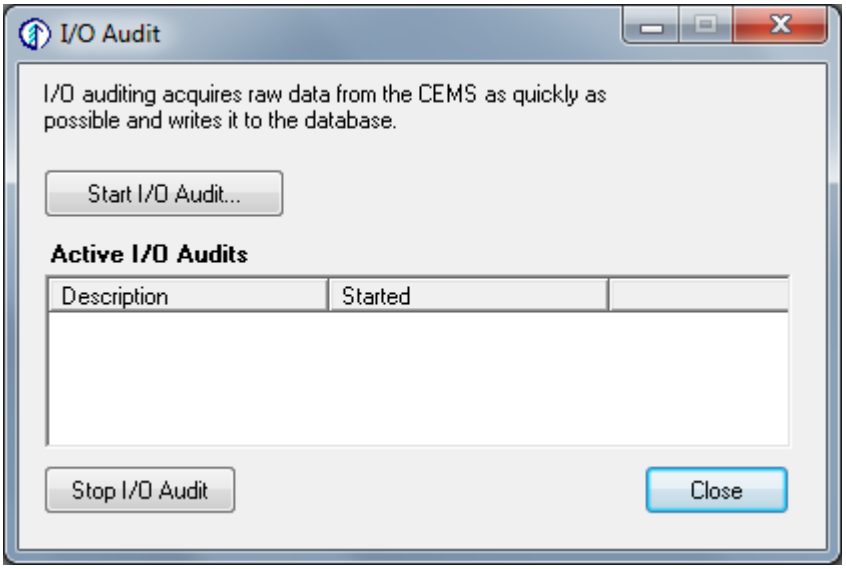
Cedar normally reads CEMS data every 10 seconds. When an I/O audit is active, Cedar reads the selected parameters from the CEMS as quickly as possible. The read frequency depends on the communication speed and the amount of other data that Cedar must read from the CEMS, but may be as often as once per second.

I/O auditing can be useful for troubleshooting, and analyzer response time tests required for CEMS certification. Once an I/O audit is complete, an audit report can be printed from the Cedar Report Generator.

I/O Audit Window

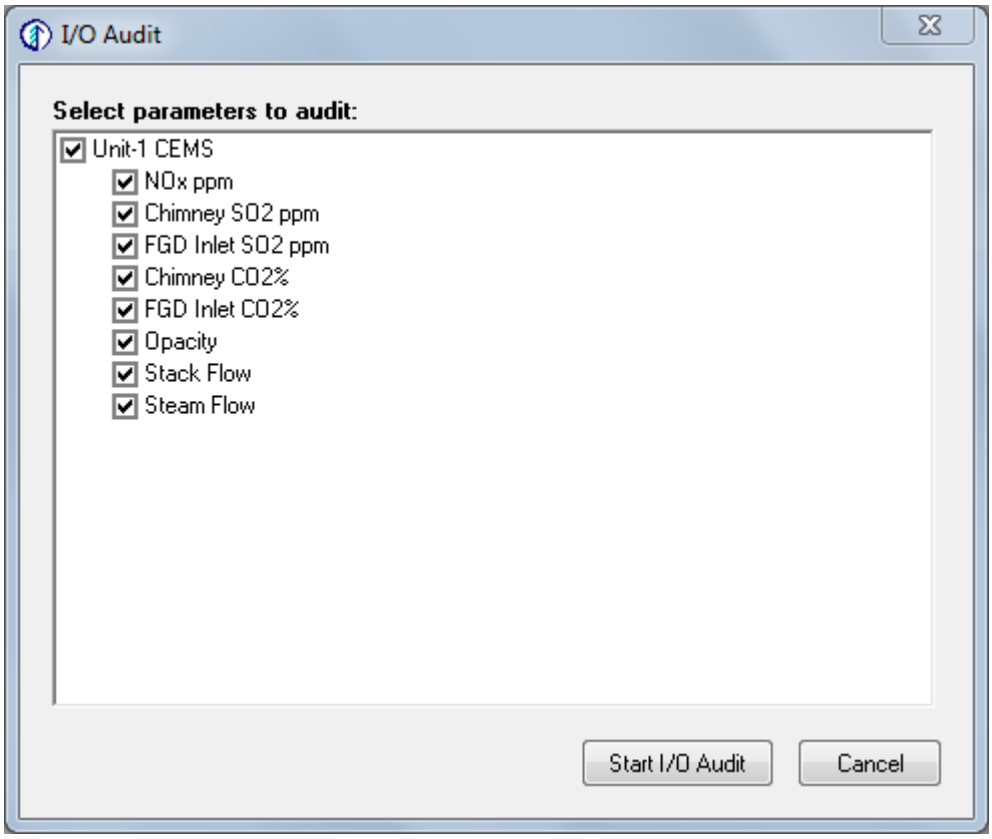
In the Data Monitor main window menu, click Tools > I/O Auditing. The I/O Audit window appears.

An I/O audit can be started from this window. If the CEMS control panel supports it, I/O auditing may also be started with a button in the CEMS shelter or cabinet. Multiple I/O audits may be active at one time.



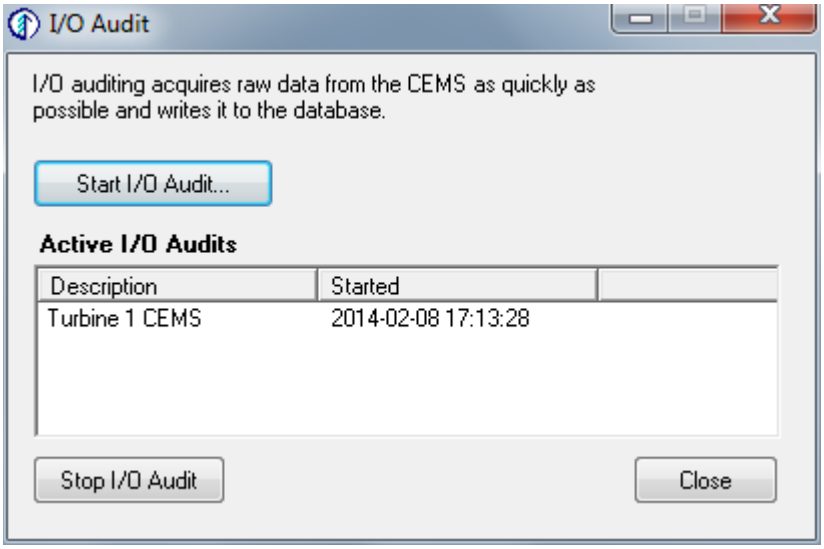
Starting an I/O Audit

Click the Start I/O Audit button to start a new audit. A window displays the parameters that can be audited.



Choose the unit(s) and parameter(s) to audit. Click the Start button to start the audit.

Within a minute of starting the audit, the I/O Audit window shows the audit that has been started, and the time when the audit started.



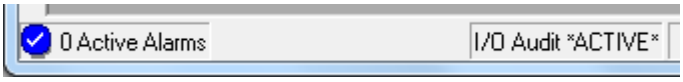
Stopping an I/O Audit

To stop an audit, select the I/O audit you wish to stop, and click the Stop button.

If an I/O audit was started from the CEMS shelter or cabinet, it must be stopped from that location. It cannot be stopped from this window.

I/O Audit Status

The Data Monitor status bar indicates when an I/O audit is active.



I/O Audit Alarm

Cedar generates an alarm if an I/O audit remains active for more than 3 hours. The alarm reappears every 20 minutes until the I/O audit is stopped.

Data Monitor File Menu

The File menu has these options:

Close

Closes the current active window only. It does not close the Data Monitor.

Reports

Opens the Report Generator for displaying and printing reports.

Data Editor

Opens the Data Editor to allow viewing and/or editing of stored data.

Print Screen

Prints a screen shot of the Data Monitor window to the default printer.

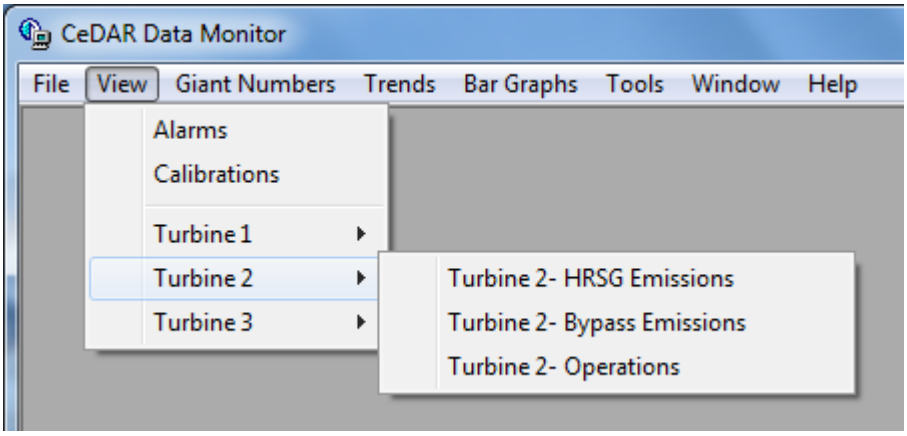
Exit

Closes the Data Monitor. A dialog box asks you to confirm that you want to exit.

The exit operation may be password protected. After clicking OK in the dialog box, you may have to enter a password.

Data Monitor View Menu

The View menu has these options:



Alarms

Opens the Alarms window.

Calibrations

Opens the Calibration Checks window, where you can view recent CEMS calibration checks.

Facility-specific windows

The remaining windows are specific to your facility. A check mark next to the menu item indicates that the window is open, although it may be minimized or hidden. To view a hidden or minimized window, click View and the window you wish to see.

Data Monitor Tools Menu

The Tools menu has these options:

I/O Auditing

Allows you to start, stop, and change I/O auditing.

Settings

Allows you to change settings that affect the software and CEMS.

Auto Calibration Checks

Allows you to configure auto calibration checks for the CEMS. This menu item is disabled if the monitoring system does not support this feature.

Options

Allows you to change options within the Data Monitor.

Software Support

This menu is intended to assist CiSCO software support personnel.

Make Sure Last Cals Are In Database

Forces Cedar to verify that the most recent calibration checks from the CEMS has been stored in the database. This feature is rarely used. When the Cedar Data Recorder Service starts running, it automatically retrieves the most recent calibration checks from the CEMS.

Make Sure Last CGAs/Linearity Checks Are In Database

Forces the software to verify that the most recent CGA or Linearity Check data has been stored in the database. This feature is rarely used. It is useful if Cedar was not running when a CGA or linearity check was performed, and the data now needs to be retrieved from the CEMS.

Make Sure Historical PLC Data Is In Database

For CEMS that store backup data in the PLC, Cedar automatically retrieves the data every night to fill in any "gaps" in the data. Use this menu item to manually start the historical data retrieval (HDR) process. This feature is rarely needed, but can be useful if Cedar was not running overnight.

Data Monitor Options

The Options window allows you to customize certain features and provide general information about system settings and file locations.

In the Data Monitor main window menu, click Tools > Options.

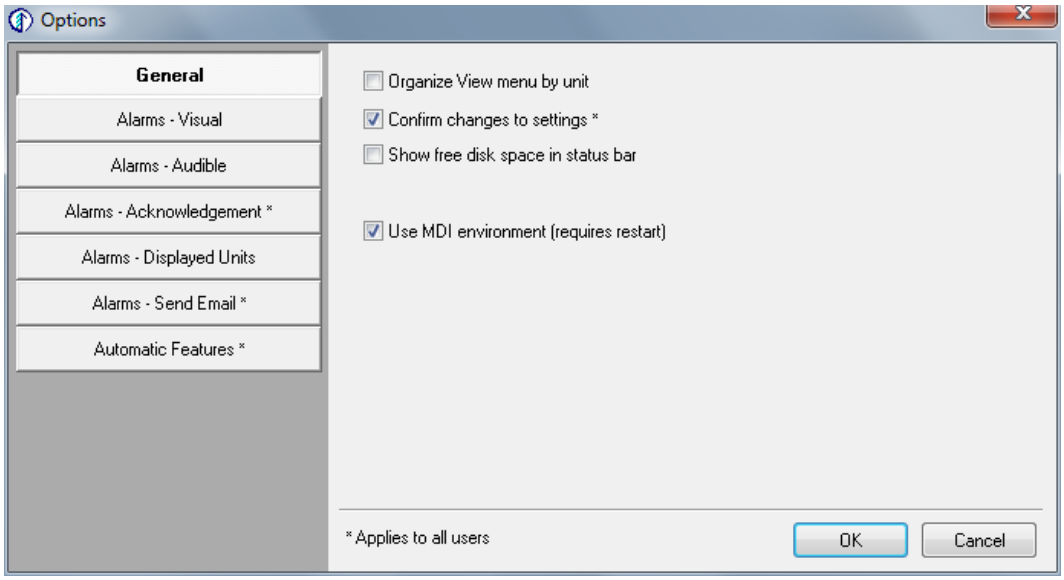
The Options window has these pages:

- General
- Alarms - Visual
- Alarms - Audible
- Alarms - Acknowledgement
- Alarms - Displayed Units
- Alarms - Send Email
- Automatic Functions

Data Monitor Options: General

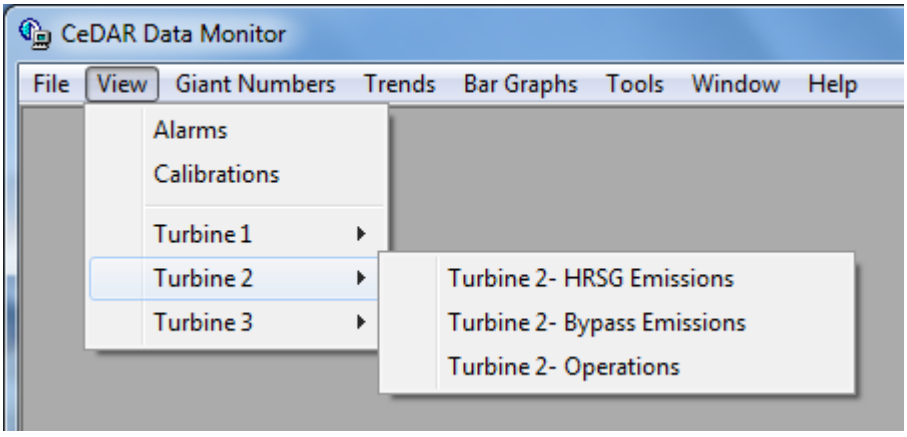
In the Data Monitor main window menu, click Tools > Options > General.

The General page provides the following options:

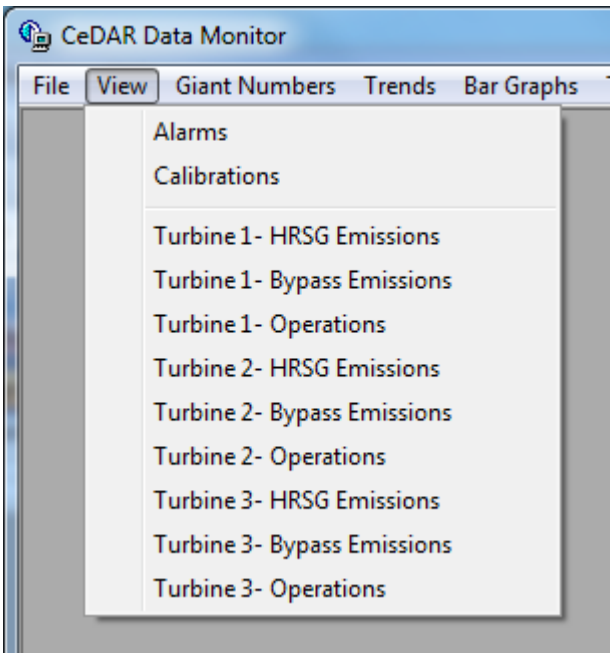


Organize View menu by unit

When this option is checked, the facility-specific windows in the Data Monitor View menu are organized into a two-level menu by unit. This option can be useful for a facility that has many units and windows. If the facility has only one unit, this option is not available.



When this option is unchecked, all the facility-specific windows appear in the main View menu.



Confirm changes to settings

When this option is checked, Cedar asks the user to confirm any change to a setting. A dialog box prompts the user to confirm that the setting value should be saved, or the user can cancel the change. This option applies to all users.

Show free disk space in status bar

When this option is checked, the Data Monitor displays the free disk space of the local machine in the status bar.

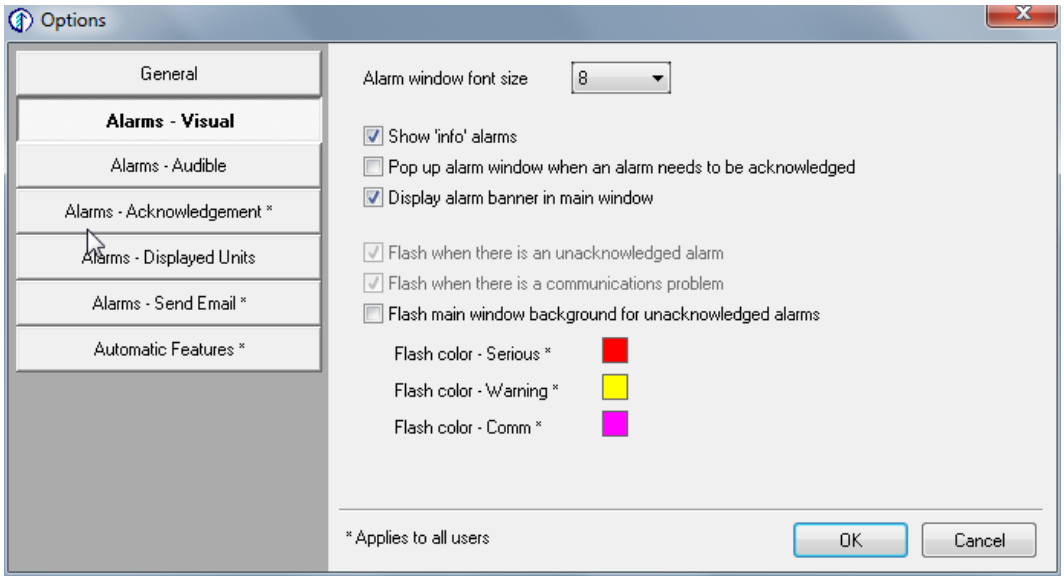
Use MDI environment

When this option is unchecked, the facility-specific windows can be moved anywhere on the Windows desktop. The windows are not confined to the main Data Monitor window. This option can be useful for computers with multiple monitors. When this option is changed, the Data Monitor must be restarted for the change to take effect.

Data Monitor Options: Alarms - Visual

In the Data Monitor main window menu, click Tools > Options > Alarms - Visual.

The Alarms - Visual page provides the following options:



Alarm window font size

The font size of the text in the alarm window can be changed. This affects both the alarm window and the alarm banner at the bottom of the main Data Monitor window.

Show 'Info' alarms

When this option is checked, Info alarms are displayed in the alarm window and alarm banner. When this option is unchecked, only Serious and Warning alarms are displayed.

Pop up alarm window when an alarm needs to be acknowledged

When this option is checked, the alarm window automatically pops up when the user needs to acknowledge a new alarm.

Display alarm banner in main window

When this option is checked, the alarm banner is visible at the bottom of the main Data Monitor window.

Flash when there is an unacknowledged alarm

This box is always checked and cannot be unchecked. This serves as a reminder that the Data Monitor flashes when the user needs to acknowledge an alarm.

Flash when there is a communications problem

This box is always checked and cannot be unchecked. This serves as a reminder that the Data Monitor flashes continuously when there is a communications failure. This flash usually indicates that Cedar cannot communicate with a CEMS PLC.

Flash main window background for unacknowledged alarms

When this option is checked, the background of the main Data Monitor window flashes when there is an unacknowledged alarm.

Flash colors

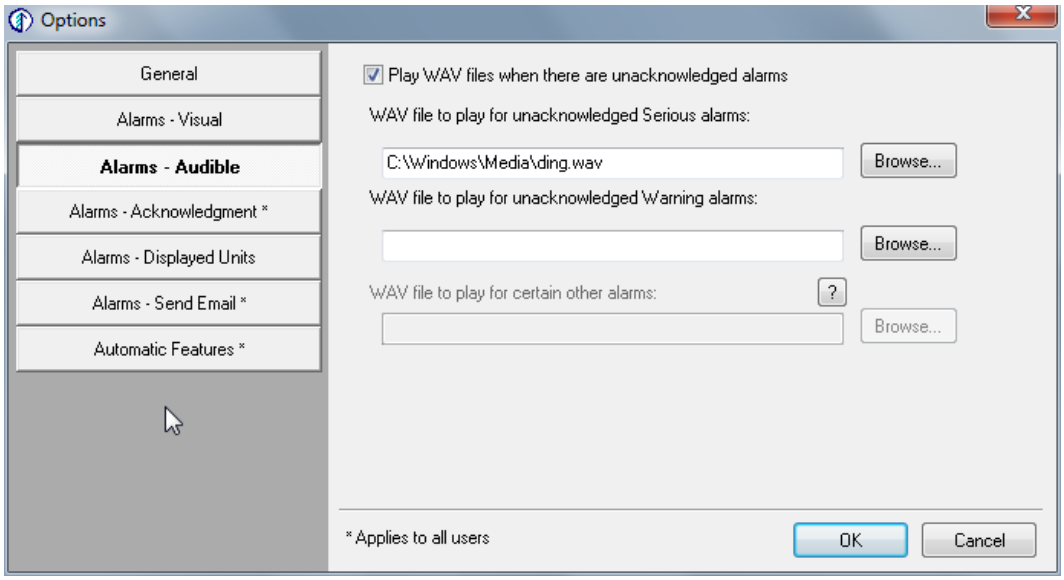
The alarm flash colors can be customized for serious alarms, warning alarms, and communication failures. Click the colored box to display the available colors. Click the color of your choice.

The selected alarm colors apply to all users.

Data Monitor Options: Alarms - Audible

In the Data Monitor main window menu, click Tools > Options > Alarms - Audible.

The Alarms - Audible page provides the following options:



Play WAV files when there are unacknowledged alarms

When this option is checked, the Data Monitor can play .WAV-format audio files when the user needs to acknowledge an alarm.

WAV file to play for unacknowledged Serious alarms

If a valid WAV file is selected in the box, the Data Monitor will play the sound when the user needs to acknowledge a serious alarm.

WAV file to play for unacknowledged Warning alarms

If a valid WAV file is selected in the box, the Data Monitor will play the sound when the user needs to acknowledge a warning alarm. If serious and warning alarms both need to be acknowledged, the Data Monitor will play the serious sound.

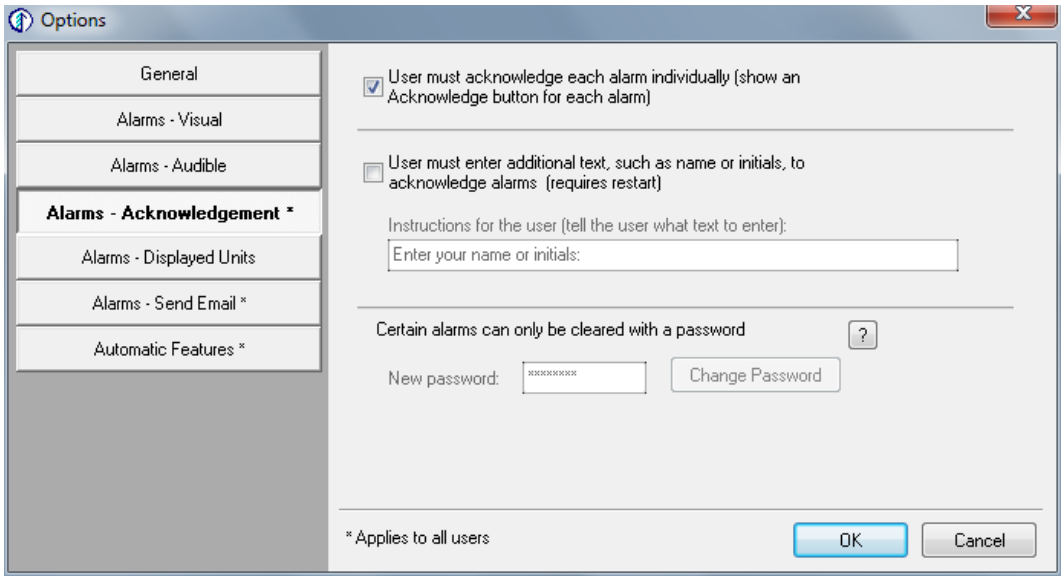
WAV file to play for certain other alarms

This option is rarely used. Cedar can be configured so that selected alarms play a third audio file, separate from the serious and warning sounds. Click the question mark button to see the list of alarms that use this audio file. If your facility needs this option to be configured, please contact CiSCO software support.

Data Monitor Options: Alarms - Acknowledgement

In the Data Monitor main window menu, click Tools > Options > Alarms - Acknowledgement.

The Alarms - Acknowledgement page provides the following options:

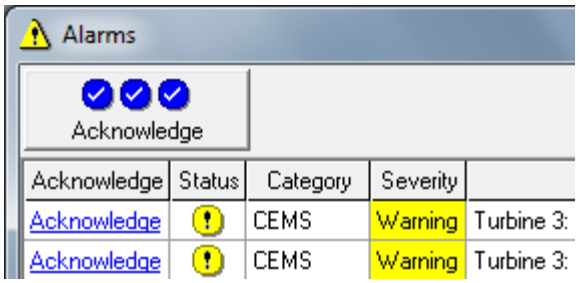


The options on this page apply to all users.

User must acknowledge each alarm individually

When this option is checked, the user must click on each alarm to acknowledge it.

When this option is unchecked, the alarm window has an Acknowledge button that can acknowledge all alarms at once.

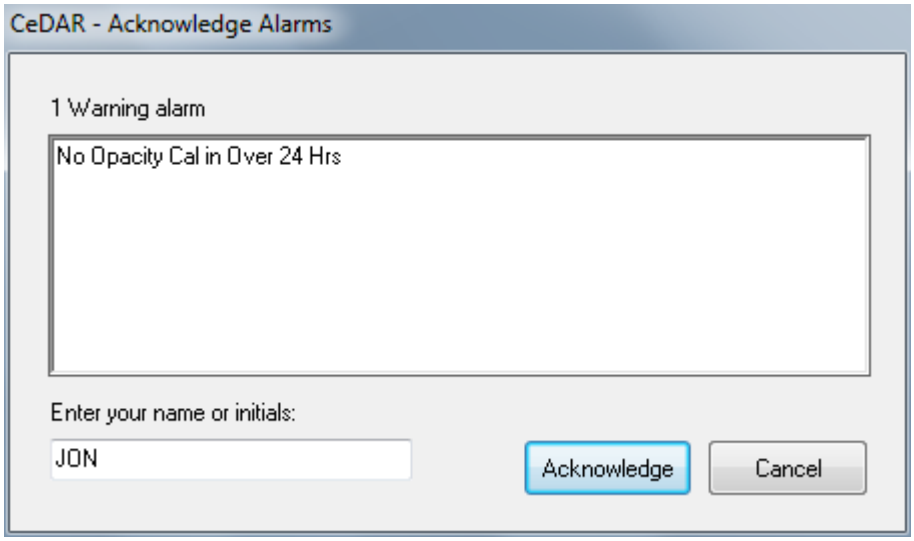


This option only applies to the alarm window. It does not apply to the alarm banner at the bottom of the main Data Monitor window. The alarm banner only allows the user to acknowledge alarms individually.

User must enter additional text to acknowledge alarms

When this option is checked, the user is instructed to enter some text, usually their name or initials, in order to acknowledge an alarm. Provide instructions for what the user needs to enter.

This window appears when a user acknowledges an alarm.



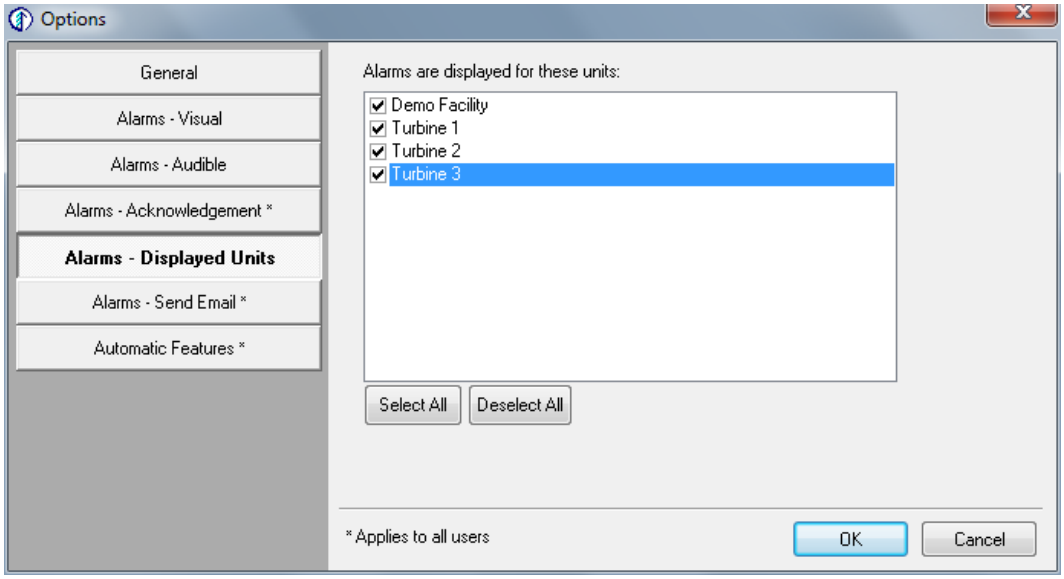
Certain alarms can only be cleared with a password ("manual reset" alarms)

This option is rarely used. Cedar can be configured so that the user must enter a password to acknowledge certain alarms. Click the question mark button to see the list of alarms that use this option. If your facility needs this option to be configured, please contact CiSCO software support.

Data Monitor Options: Alarms - Displayed Units

In the Data Monitor main window menu, click Tools > Options > Alarms - Displayed Units.

On this page, the Data Monitor can be customized to display alarms only for selected units.



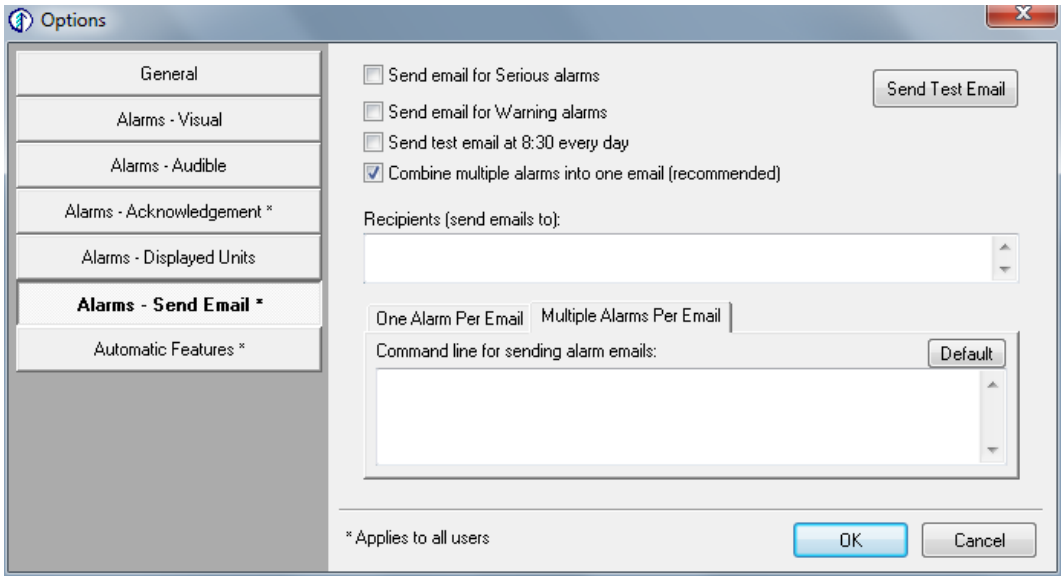
A facility may have multiple control rooms, and each control room operates certain units. This page allows each control room to show only the alarms for units that are operated by that control room.

Alarms that are not unit-specific always appear for all users.

Data Monitor Options: Alarms - Send Email

In the Data Monitor main window menu, click Tools > Options > Alarms - Send Email.

On this page, Cedar can be customized to send email messages for new alarms.



Configuring this feature often requires coordination with IT personnel who are responsible for the email server. Please contact CiSCO software support if you need assistance setting up this feature.

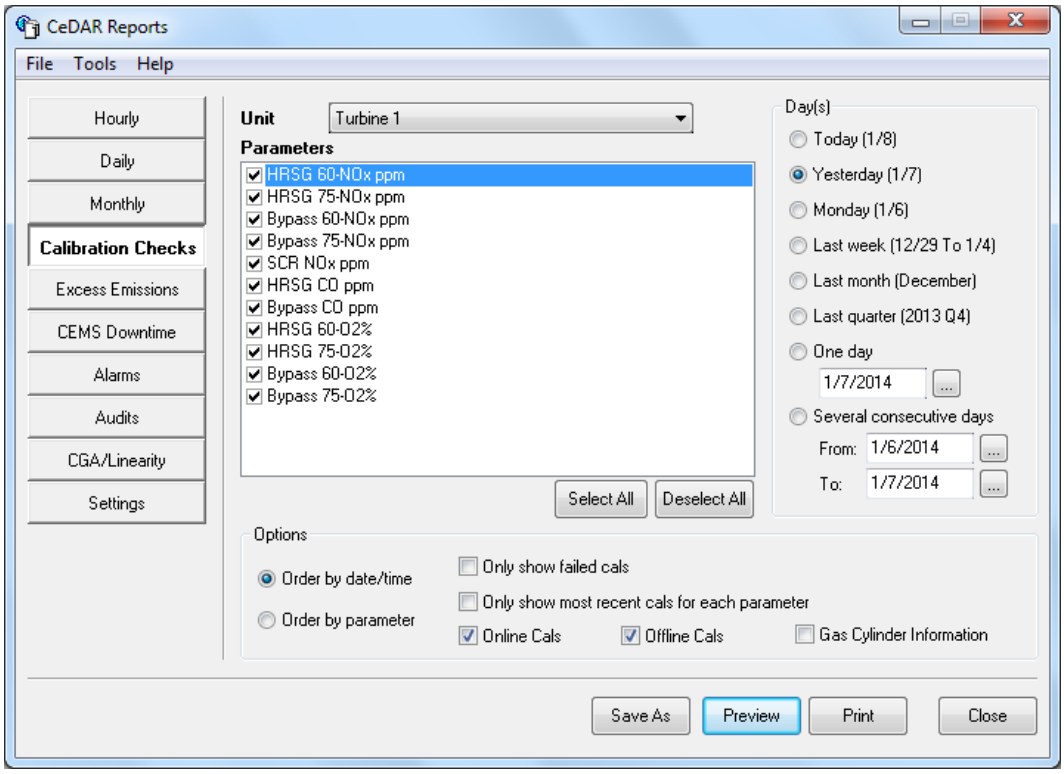
Chapter 3: Report Generator

Overview

The Cedar Report Generator allows you to view and print reports. Some reports are pre-configured by CiSCO for your facility, and you can create your own reports. You can also set up reports to run automatically, such as every day or after calibration checks are complete.

Main Window

In the main window of the Cedar Report Generator, the reports are grouped into categories listed on the left side of the window. There may be more or fewer categories depending on how Cedar is configured for your facility.



When you click on a report category, the reports for that category are displayed in the center section of the window. Click on the report you wish to view in this center section and it becomes highlighted.

The right side of the window contains time frame selections. The possible selections vary by report category.

Depending on the report category you select, there may be additional options displayed underneath the list of reports for that category. These options are explained separately in the following pages as each report category is discussed.

PDF Reader

The Cedar Report Generator creates most reports as PDF files. A PDF reader application is required to view and print the reports. Foxit Reader (www.foxitsoftware.com) and Adobe Reader (get.adobe.com/reader) are the most popular reader applications.

Note

Adobe Reader does not function properly under the built-in special accounts, such as Network Service, Local Service, and Local System.

Foxit Reader is required on the DAS if auto reports will be printed from one of the built-in accounts. Foxit Reader is available from www.foxitsoftware.com.

Adobe Reader may be used if automatic reports will run under an account that has a typical profile (not a built-in account).

Both Adobe Reader and Foxit Reader may be installed, if desired.

Previewing a Report

Click Preview to generate a report. A progress bar appears while Cedar prepares the data and generates the report file.

The report is displayed in your PDF reader application.

Printing a Report

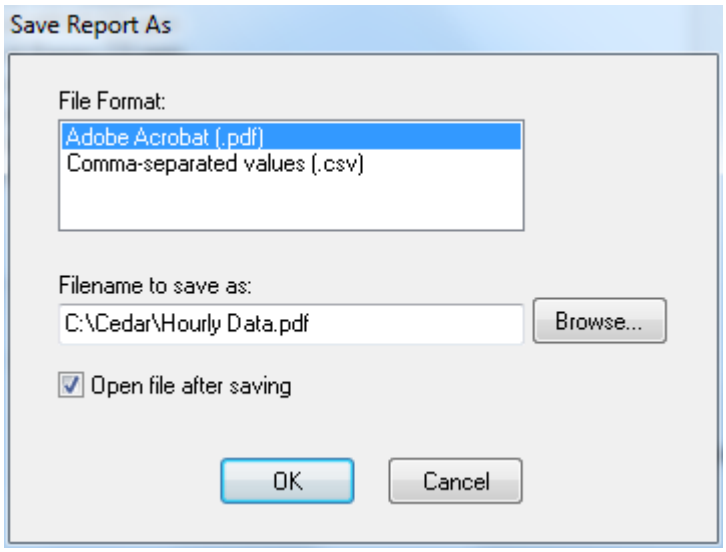
Click Print to print a report. A progress bar appears while Cedar prepares the data and generates the report file. Your PDF viewer application opens and prints the report.

The Print button sends the report to your default printer. If you want to print to a different printer, click the Preview button. Once the report appears in your PDF viewer application, use its print feature to choose a different printer.

Saving a Report

The Save As option is useful for exporting data to Microsoft Excel or emailing a report in PDF format.

Click the Save As button. The Save Report As window appears.



Select a file format. Most reports can either be saved as PDF (Adobe Acrobat) or CSV (Comma Separated Values). Audit reports can also be saved as an Excel spreadsheet if Microsoft Excel is installed on the computer.

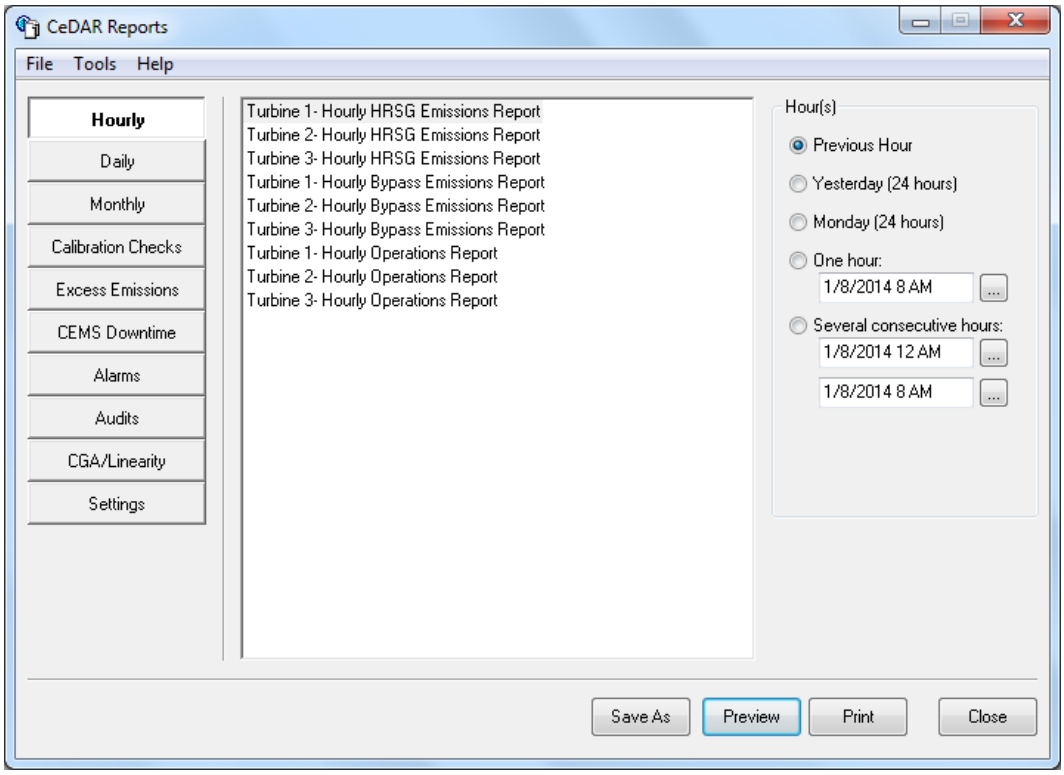
- PDF is useful for viewing, printing, and emailing reports.
- CSV is useful for importing data into a spreadsheet (such as Microsoft Excel) for further analysis.

Select a location to save the report. Use the Browse button to choose a folder and filename.

If the "Open file after saving" box is checked, the report will open in the associated application after it has been saved.

Hourly Reports

An hourly report displays data for one hour. Hourly reports typically display 1-minute detail data and 1-hour aggregate data.



Depending on the requirements for your facility, several pre-configured reports are available. You can define new hourly reports with the Report Wizard.

Here is an example of an hourly report.

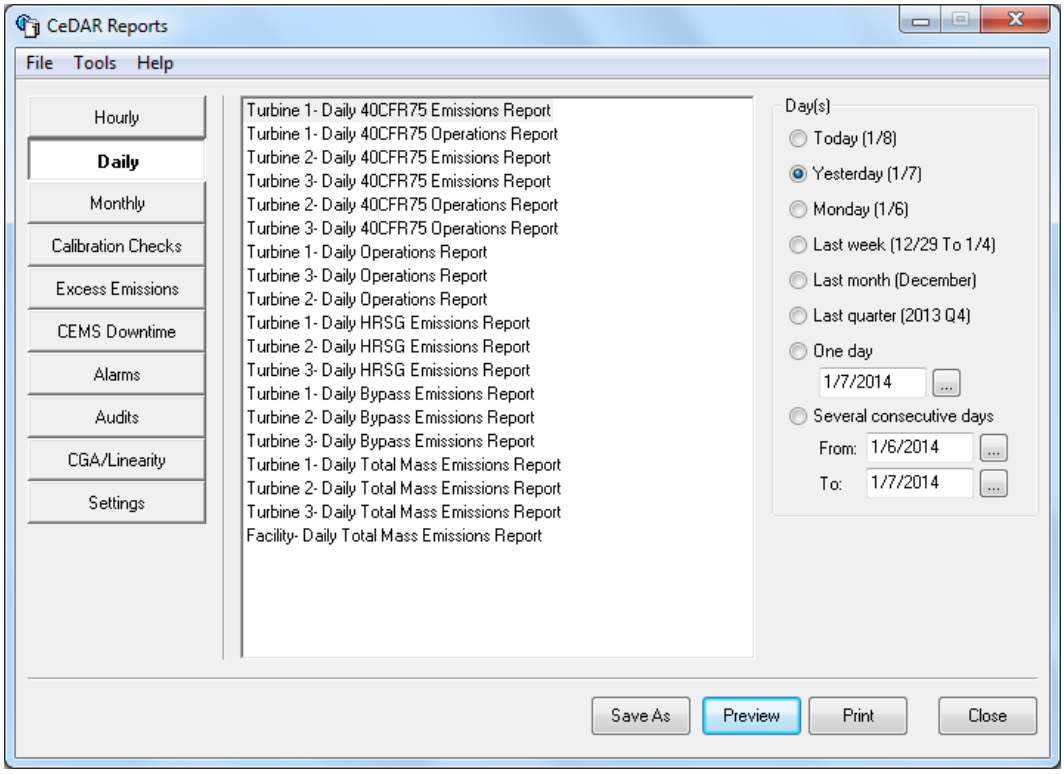
Demo Facility
Facility Location
Turbine 1- Hourly HRSG Emissions Report
December 18, 2013 - Hour 9

	Hourly Emission Limits			
	NOx ppm @15% O2	*NOx lbs*	*CO lbs*	*NH3 Slip*
Combined Cycle	2 (24-Hr Rolling)	24.9	52.2	25.3
Simple Cycle	9	63	52.2	---
Startup/Shutdown	---	650	1900	---

Minute	O2%	NOx ppm	NOx ppm @15% O2	NOx lb/mmBtu	NOx lb/hr	CO ppm	CO ppm @15% O2	CO lb/mmBtu	CO lb/hr	NH3 Slip ppm	NH3 Slip ppm @15% O2	NH3 Slip lb/mmBtu	NH3 Slip lb/hr	Process Status
00	13.98	2.11	1.80	0.0066	10.96	0.86	0.73	0.0016	2.66	6.80	5.8	0.0079	13.12	Normal
01	13.98	2.11	1.80	0.0066	10.87	0.87	0.74	0.0017	2.80	6.52	5.6	0.0076	12.52	Normal
02	13.97	2.16	1.84	0.0068	11.04	0.95	0.81	0.0018	2.92	6.32	5.4	0.0073	11.85	Normal
03	13.96	2.15	1.83	0.0067	10.95	0.94	0.80	0.0018	2.94	6.35	5.4	0.0073	11.93	Normal

Daily Reports

A daily report displays data for one day. Daily reports typically display 1-hour detail data and 1-day aggregate data.



Depending on the requirements for your facility, several pre-configured reports are available. You can define new daily reports with the Report Wizard.

Here is an example of a daily report.

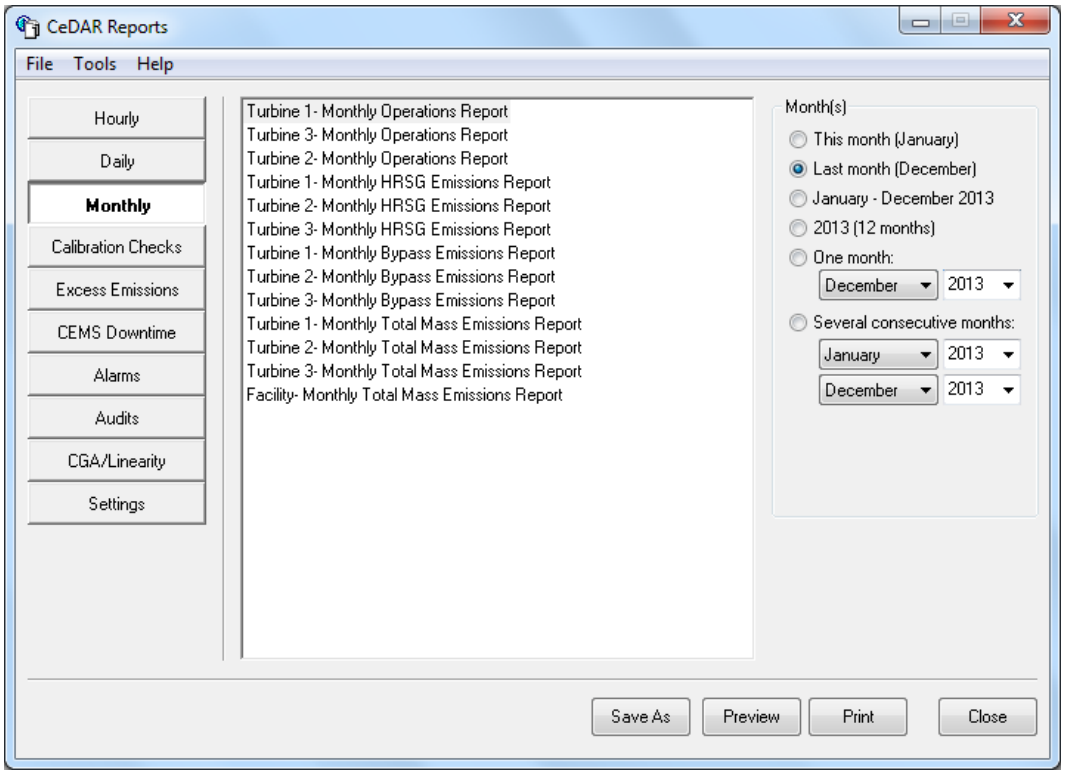
Demo Facility
Facility Location
Turbine 1- Daily HRSG Emissions Report
December 18, 2013

	Hourly Emission Limits			
	NOx ppm @15% O2	NOx lbs	CO lbs	NH3 Slip
Combined Cycle	2 (24-Hr Rolling)	24.9	52.2	26.3
Simple Cycle	9	63	52.2	---
Startup/Shutdown	---	650	1900	---

Hour	O2%	NOx ppm	NOx ppm @15% O2	NOx lb/mmBtu	NOx lbs	CO ppm	CO ppm @15% O2	CO lb/mmBtu	CO lbs	NH3 Slip ppm	NH3 Slip ppm @15% O2	NH3 Slip lb/mmBtu	NH3 Slip lbs	Process Status
00	13.98	2.17	1.85	0.0068	11.50	0.88	0.75	0.0017	2.88	8.71	7.4	0.0101	6.43	Normal
01	13.99	2.17	1.85	0.0068	11.88	0.88	0.75	0.0017	2.97	8.73	7.5	0.0101	6.81	Normal
02	13.99	2.17	1.85	0.0068	11.84	0.91	0.78	0.0017	2.96	8.99	7.7	0.0104	6.97	Normal
03	14.00	2.16	1.85	0.0068	11.91	0.89	0.76	0.0017	2.98	8.95	7.7	0.0104	7.01	Normal
04	13.97	2.16	1.84	0.0068	12.58	0.87	0.74	0.0017	3.14	7.94	6.8	0.0092	6.29	Normal

Monthly Reports

A monthly report displays data for one month. Monthly reports typically display 1-day detail data and 1-month aggregate data.



Depending on the requirements for your facility, several pre-configured reports are available. You can define new monthly reports with the Report Wizard.

Here is an example of a monthly report.

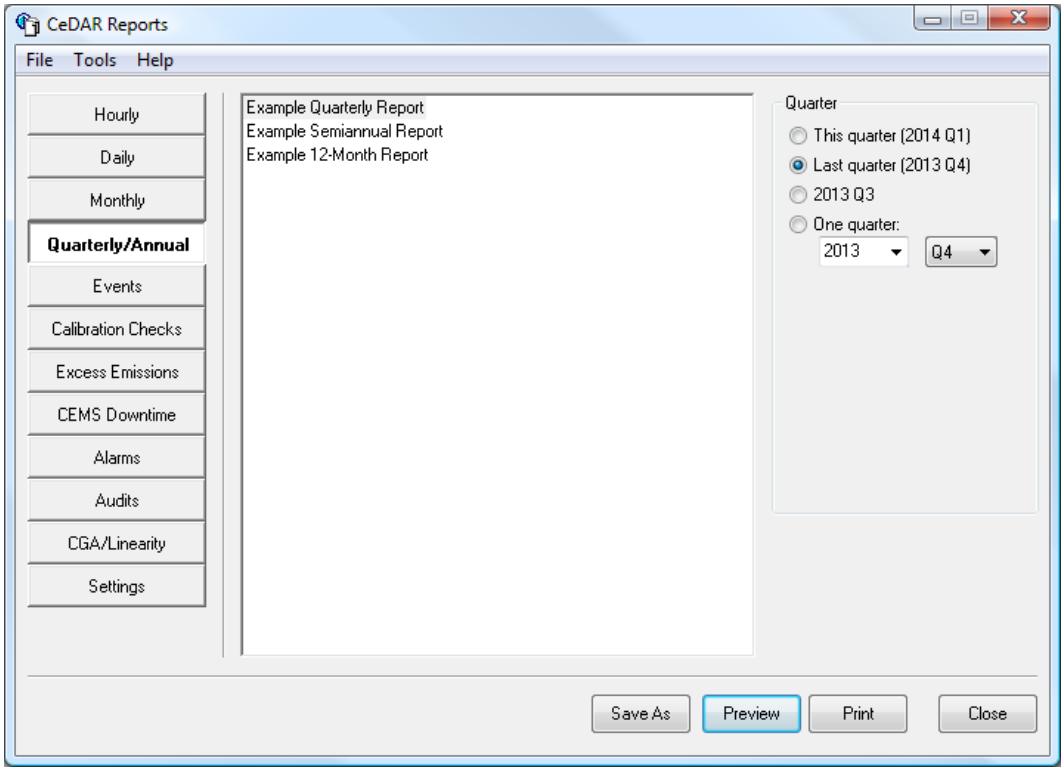
Demo Facility
Facility Location
Unit-1 Monthly NOx Report
November - 2013

Day	NOx ppm	NOx lb/mmBtu	NOx lb/mmBtu 30-Day Rolling	NOx lbs	CO2%
01	186.25	0.375	0.310	462.38	10.97
02	183.23	0.319	0.311	496.42	12.34
03	187.96	0.325	0.311	509.36	12.41
04	192.00	0.324	0.311	515.95	12.75
05	195.64	0.325	0.311	516.98	12.95
06	191.57	0.321	0.311	504.14	12.83
07	191.01	0.320	0.311	505.48	12.83

Quarterly Reports

Quarterly, annual, semiannual, and 12-month rolling reports all appear in the same list.

A quarterly report displays data for one quarter. Quarterly reports typically display 1-month or 1-day detail data and 1-quarter aggregate data.



Depending on the requirements for your facility, pre-configured reports may be available. You can define new quarterly reports with the Report Wizard.

Here is an example of a quarterly report.

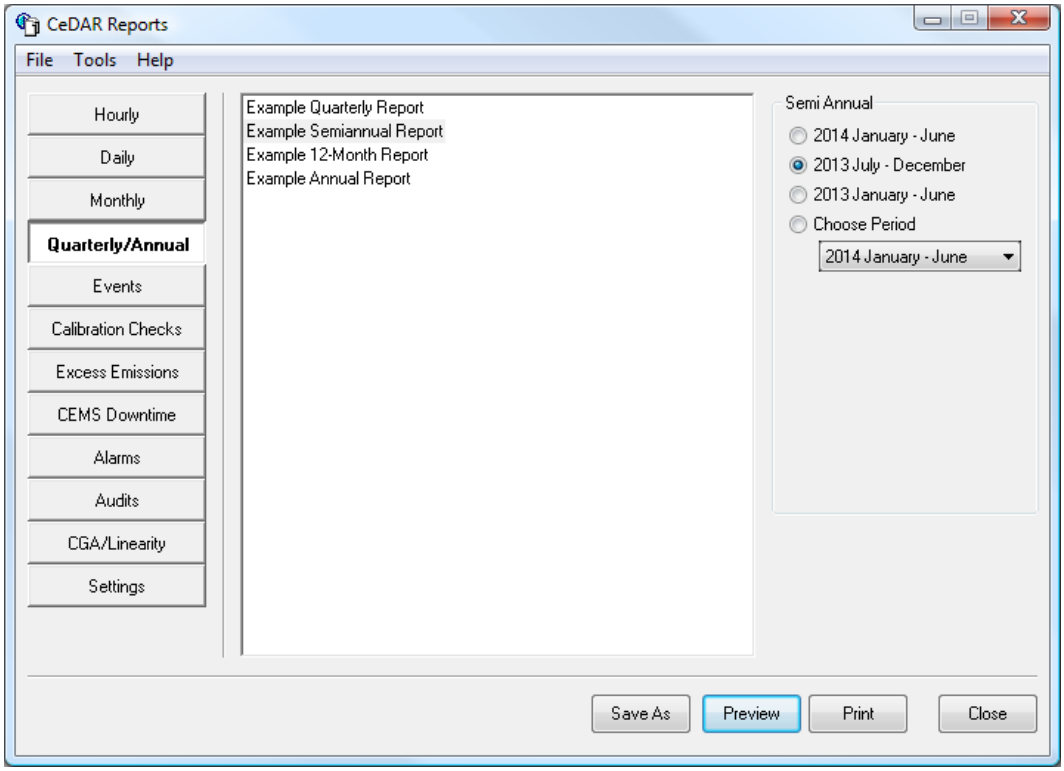
Demo Facility
Facility Location
Example Quarterly Report
2013 Q4

Month	NOx lbs	SO2 lbs	CO2 tons
October	202692	67178	68588
November	309489	98896	98211
December	299426	86057	97411

Semiannual Reports

Quarterly, annual, semiannual, and 12-month rolling reports all appear in the same list.

A semiannual report displays data for six months, January-June or July-December. Semiannual reports typically display 1-month detail data and 6-month aggregate data.



Depending on the requirements for your facility, pre-configured reports may be available. You can define new semiannual reports with the Report Wizard.

Here is an example of a semiannual report.

Demo Facility
Facility Location
Example Semiannual Report
2013 Semi-Annual (July)

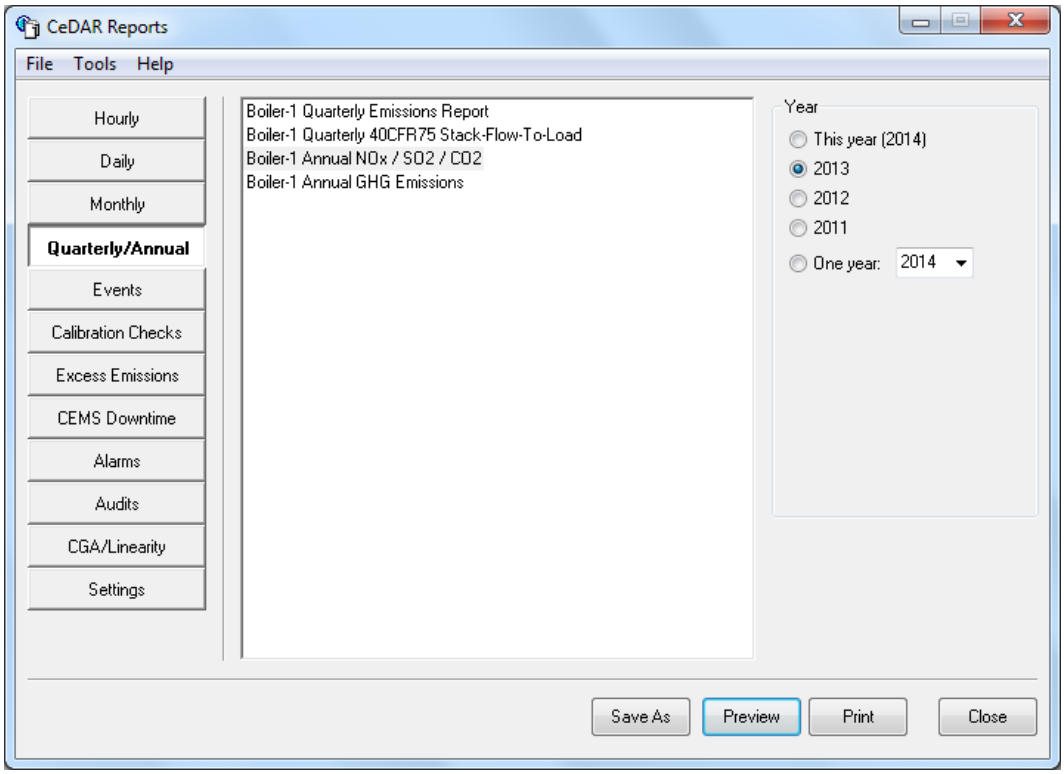
Month	NOx tons	SO2 tons	CO2 tons
Jul	183.3	57.5	119393
Aug	178.5	66.6	119920
Sep	177.7	49.9	116007
Oct	102.9	34.0	68588
Nov	154.8	49.6	98211
Dec	149.9	43.1	97411

Annual Reports

Quarterly, annual, semiannual, and 12-month rolling reports all appear in the same list.

An annual report displays data for one year. Annual reports typically display 1-month or 1-quarter detail data and 1-year aggregate data.

If your facility has 365-day rolling values, they typically appear on a daily report, since the values change every day.



Depending on the requirements for your facility, pre-configured reports may be available. You can define new annual reports with the Report Wizard.

Here is an example of an annual report.

Demo Facility

Facility Location

Example Annual Report

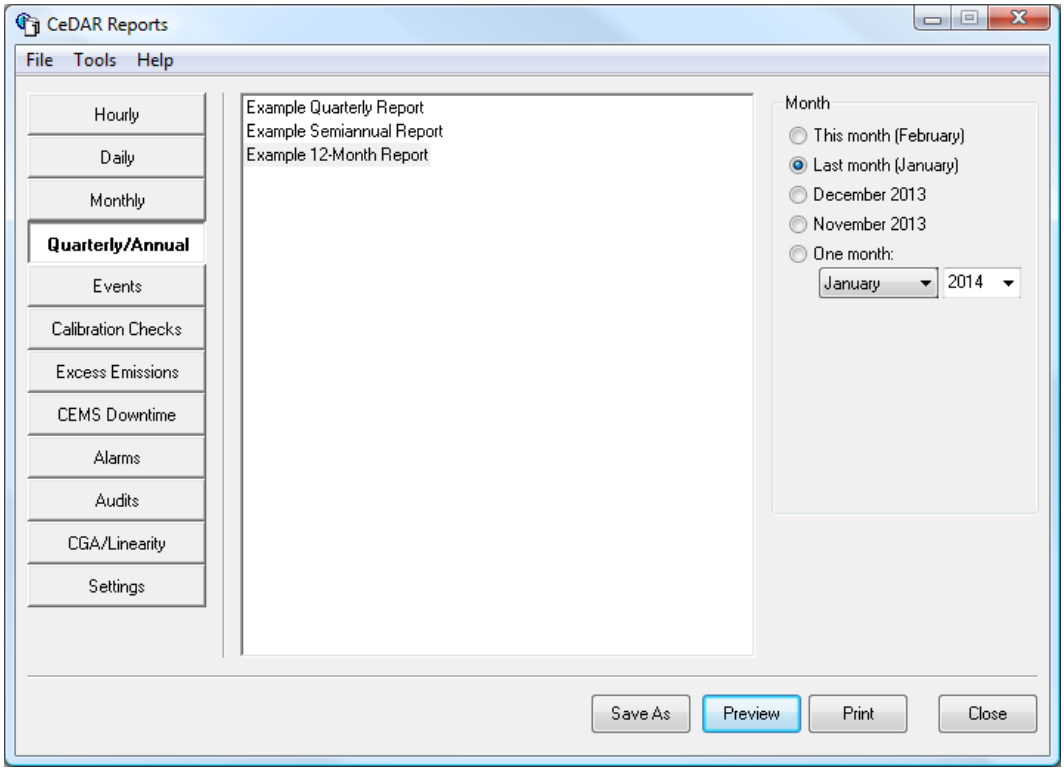
2013

Month	NOx tons	NOx tons YTD	SO2 tons	SO2 tons YTD
January	150.6	150.6	41.2	41.2
February	136.0	286.6	43.4	84.6
March	75.4	362.0	23.5	108.1
April	122.1	484.1	35.0	143.1
May	176.3	660.5	60.2	203.2
June	177.1	837.6	52.7	255.9
July	182.8	1020.4	57.5	313.4
August	178.5	1198.9	66.6	380.0
September	176.9	1375.8	49.9	429.9
October	101.3	1477.1	33.6	463.5
November	154.7	1631.9	49.4	513.0
December	149.7	1781.6	43.0	556.0
Total	1781.6		556.0	

12-Month Rolling Reports

Quarterly, annual, semiannual, and 12-month rolling reports all appear in the same list.

A 12-month rolling report displays data for 12 consecutive months. 12-month rolling reports typically display 1-month detail data and 12-month aggregate data.



Depending on the requirements for your facility, pre-configured reports may be available. You can define new 12-month rolling reports with the Report Wizard.

Here is an example of a 12-month rolling report.

Demo Facility

Facility Location

Example 12-Month Report

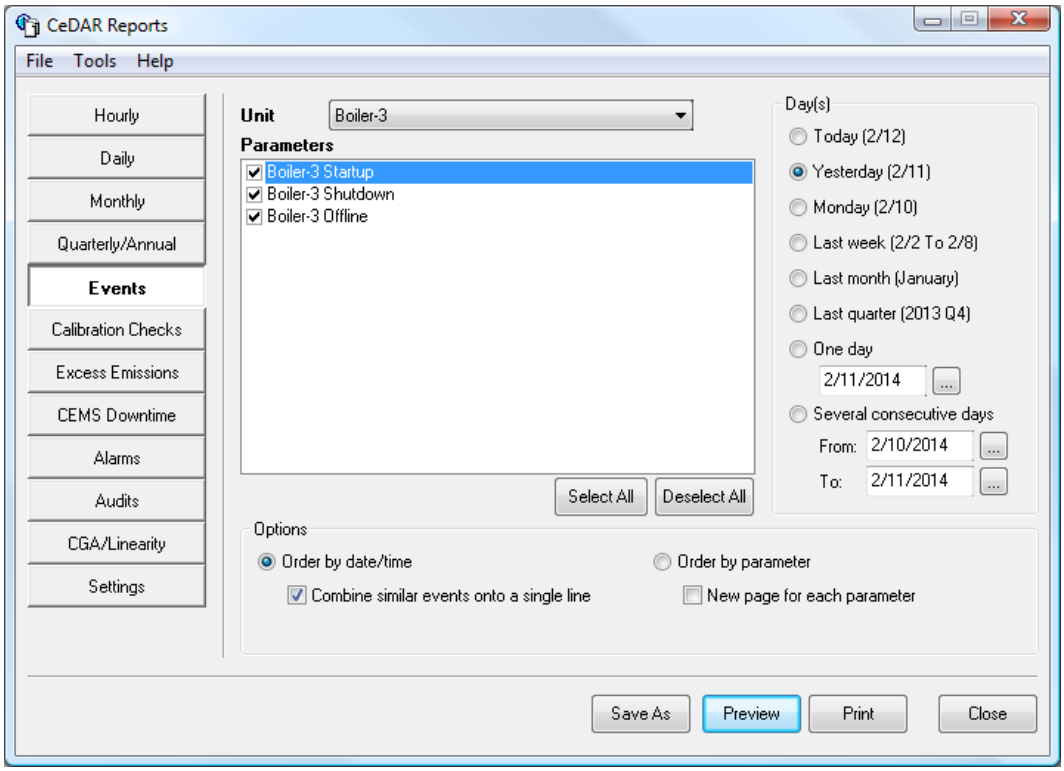
October 2013 12-Month Rolling

Month	NOx tons	SO2 tons
November	163.8	32.4
December	169.6	35.3
January	150.6	41.2
February	136.0	43.4
March	75.4	23.5
April	122.1	35.0
May	176.3	60.2
June	177.1	52.7
July	182.8	57.5
August	178.5	66.6
September	176.9	49.9
October	101.3	33.6

Event Reports

An event report displays durations and values for events. Common events are unit startup and shutdown.

Event reports are available if they have been configured for your facility.



Here is an example of an event report.

Boiler-3 Events

Demo Facility
for 3/1/2014 thru 3/31/2014

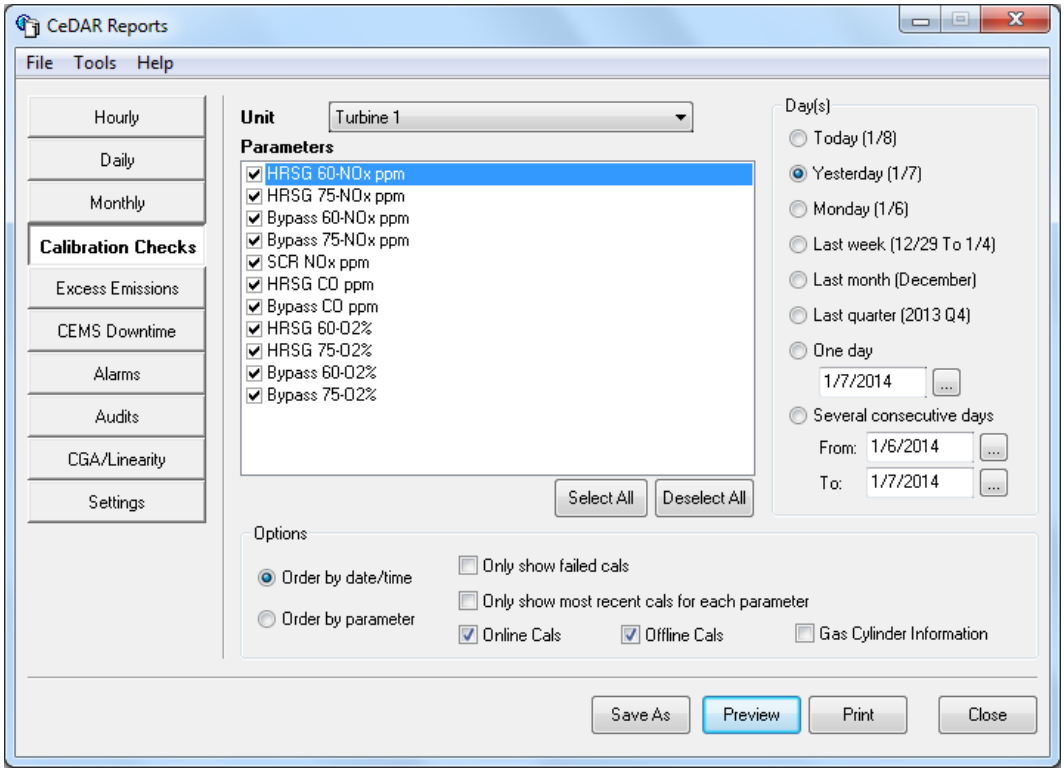
Parameter	Start	End	Duration	Value
Boiler-3 Offline	3/5/2014 1:57 PM	4:06 PM	2:10	
Boiler-3 Startup	3/5/2014 4:07 PM	11:48 PM	7:42	
Boiler-3 Offline	3/5/2014 11:49 PM	3/6/2014 1:22 AM	1:34	
Boiler-3 Startup	3/6/2014 1:23 AM	10:17 AM	8:55	
Boiler-3 Offline	3/6/2014 10:18 AM	4:11 PM	5:54	
Boiler-3 Startup	3/6/2014 4:12 PM	3/7/2014 12:24 AM	8:13	
Boiler-3 Offline	3/7/2014 12:25 AM	12:50 AM	0:26	
Boiler-3 Startup	3/7/2014 12:51 AM	10:25 AM	9:35	
Boiler-3 Offline	3/7/2014 10:26 AM	11:01 AM	0:36	
Boiler-3 Startup	3/7/2014 11:02 AM	4:36 PM	5:35	
Boiler-3 Shutdown	3/16/2014 12:27 AM	1:30 AM	1:04	
Boiler-3 Offline	3/16/2014 1:31 AM	3/31/2014 11:59 PM	382:29	

In this example, the events are configured to show the durations, but there are no values associated with the events.

Events have values when, for example, the unit has an emission limit for pounds per startup or pounds per shutdown.

Calibration Check Reports

Calibration check reports display the results of CEMS calibration checks, stack flow monitor interference checks, and other types of daily quality assurance checks.



Here is an example of a calibration check report.

Unit-4 Calibration Checks

Demo Facility

Cal Checks for 10/8/2013

Date/Time	Parameter	Analyzer Scale	Test Level	Reference Value	Measured Value	Actual Drift	Allowable Drift	Instrument Span	Results
10/8/2013 6:18 AM	60-NOx ppm	Single	Zero	0.00 ppm	0.08 ppm	0.08 ppm	±15 ppm	300 ppm	Unit online; Passed
10/8/2013 6:18 AM	60-NOx ppm	Single	Span	168.90 ppm	166.74 ppm	-2.16 ppm	±15 ppm	300 ppm	Unit online; Passed
10/8/2013 6:18 AM	75-NOx ppm	Single	Zero	0.00 ppm	0.08 ppm	0.08 ppm	±15 ppm	300 ppm	Unit online; Passed
10/8/2013 6:18 AM	75-NOx ppm	Single	Mid	168.90 ppm	166.74 ppm	-2.16 ppm	±15 ppm	300 ppm	Unit online; Passed
10/8/2013 6:18 AM	60-Stack SO2 ppm	High	Zero	0.00 ppm	0.13 ppm	0.13 ppm	±50 ppm	1000 ppm	Unit online; Passed

Only show failed cals

When this option is selected, only failed calibrations are displayed on the report. If all calibration checks passed, the report will not show any calibration checks.

Only show most recent cals for each parameter

When this option is selected, all other report options are disabled. Only the most recent calibration check in the last 30 days for each parameter are displayed.

Online cals / Offline cals

These options allow online and/or offline calibration checks to be displayed. If neither box is checked, the report includes both online and offline calibration checks.

Gas cylinder information

When this option is selected, gas cylinder information is displayed, if available. Here is an example of a calibration check report with gas cylinder information.

Boiler-3 Calibration Checks
Demo Facility
Cal Checks for 6/1/2014

Date/Time	Parameter	Analyzer Scale	Test Level	Reference Value	Measured Value	Actual Drift	Allowable Drift	Instrument Span	Results
			Cylinder ID	*Expiration Date*		*EPA Vendor ID*	*EPA Gas Type Codes*		
6/1/2014 6:18 AM	NOx ppm (75)	Single	Zero	0.00 ppm	0.08 ppm	0.08 ppm	±15 ppm	300 ppm	Unit online; Passed
							AIR		
6/1/2014 6:18 AM	NOx ppm (75)	Single	Mid	170.10 ppm	171.79 ppm	1.69 ppm	±15 ppm	300 ppm	Unit online; Passed
			CC327935	*8/5/2016*		*B22014*	*BALN,SO2,NO,CO2*		
6/1/2014 6:18 AM	SO2 ppm (75)	High	Zero	0.00 ppm	1.01 ppm	1.01 ppm	±50 ppm	1000 ppm	Unit online; Passed
6/1/2014 6:18 AM	SO2 ppm (75)	High	Mid	567.20 ppm	569.55 ppm	2.35 ppm	±50 ppm	1000 ppm	Unit online; Passed
			CC216060	*8/4/2016*		*B22014*	*SO2,BALN*		

Color

Calibration check reports support color. To enable color, click the Tools > Options menu, and check the "Use color on reports where appropriate" box on the General tab.

If color is enabled, failed calibrations appear in red text. Otherwise, failed calibrations appear in bold text.

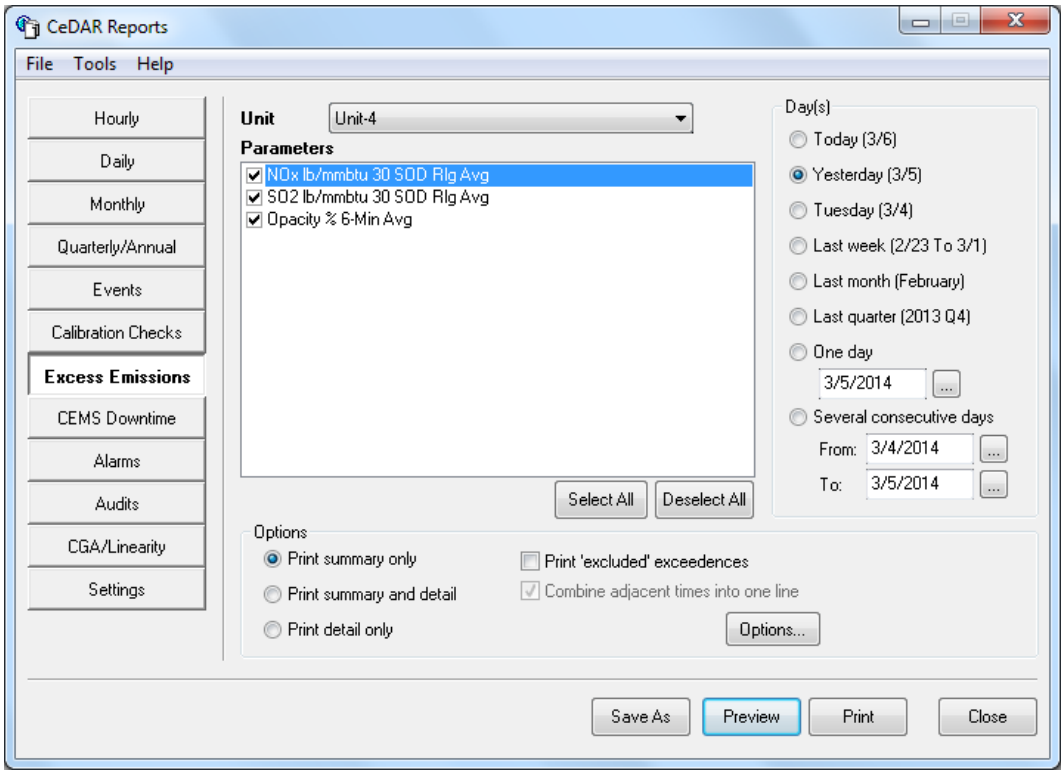
If color is enabled, calibrations that occurred when the unit was offline appear in blue text.

Unit-4 Calibration Checks
Demo Facility
Cal Checks for 10/15/2013

Date/Time	Parameter	Analyzer Scale	Test Level	Reference Value	Measured Value	Actual Drift	Allowable Drift	Instrument Span	Results
10/15/2013 6:45 AM	Opacity %	Single	Zero	0.00%	-3.29%	-3.29%	±2%	100%	Unit offline; Fail Below
10/15/2013 6:45 AM	Opacity %	Single	Span	35.00%	36.06%	1.06%	±2%	100%	Unit offline; Passed
10/15/2013 10:30 AM	Opacity %	Single	Zero	0.00%	0.01%	0.01%	±2%	100%	Unit offline; Passed
10/15/2013 10:30 AM	Opacity %	Single	Span	35.00%	34.69%	-0.31%	±2%	100%	Unit offline; Passed

Excess Emissions Reports

Excess emission reports display data for times when permit limits may have been exceeded.



Print summary only

When this option is selected, the report includes a summary page for each parameter.

Unit-4 Excess Emissions Summary

Demo Facility

Opacity Excess Emissions for 10/1/2013 thru 10/31/2013

Reason	Duration
Other known causes	1 hour, 6 minutes

Total duration of Opacity excess emissions	1 hour, 6 minutes
Total operating time	542 hours, 54 minutes
Operating time with excess emissions	0.2%

Note

The total operating time is derived from the monitor codes. Different parameters may display different operating times for the same date range. This occurs if the monitor codes are inconsistent, for example, when one parameter has an *online* monitor code and a different parameter has an *offline* monitor code for the same

date/time.

Print summary and detail

When this option is selected, the report includes a summary page for each parameter. The report also includes a detail page for each parameter that had excess emissions.

Print detail only

When this option is selected, the report includes a detail page for each parameter.

Unit-4 Excess Emissions
Demo Facility
Opacity Excess Emissions for 10/1/2013 thru 10/31/2013

Parameter	Start	End	Duration	Value	Limit	Reason	Action
Opacity	10/6/2013 3:42 PM	3:47 PM	6 minutes	14.0	13	Other known causes	Lowered load and isolated baghouse compartment

Print excluded' exceedences

Excess emissions can be marked as "excluded" in the Cedar Data Editor. Excess emissions are commonly excluded due to startup and shutdown conditions. "Excluded" items do not appear in this report unless this box is checked.

Combine adjacent times into one line

When this box is checked, excess emissions that are immediately adjacent in time are combined into one line on the report.

This option only applies to detail reports.

This example shows two excess emissions that are adjacent, but on separate lines.

Unit-4 Excess Emissions
Demo Facility
Opacity Excess Emissions for 10/1/2013 thru 12/31/2013

Parameter	Start	End	Duration	Value	Limit	Reason
Opacity	10/6/2013 3:42 PM	3:47 PM	6 minutes	14.0	13	Other known causes
Opacity	10/6/2013 3:48 PM	3:53 PM	6 minutes	18.0	13	Other known causes

This example shows the same two excess emissions combined on one line.

Unit-4 Excess Emissions
Demo Facility
Opacity Excess Emissions for 10/1/2013 thru 12/31/2013

Parameter	Start	End	Duration	Value	Min	Max	Limit	Reason
Opacity	10/6/2013 3:42 PM	3:53 PM	12 minutes	16.0	14.0	18.0	13	Other known causes

Options button

Click the Options button to see additional options for excess emission reports. The options are also available by clicking the Tools > Options menu and selecting the Excess Emissions and CEMS Downtimes tab.

Color

Excess emission detail reports support color. To enable color, click the Tools > Options menu, and check the "Use color on reports where appropriate" box on the General tab.

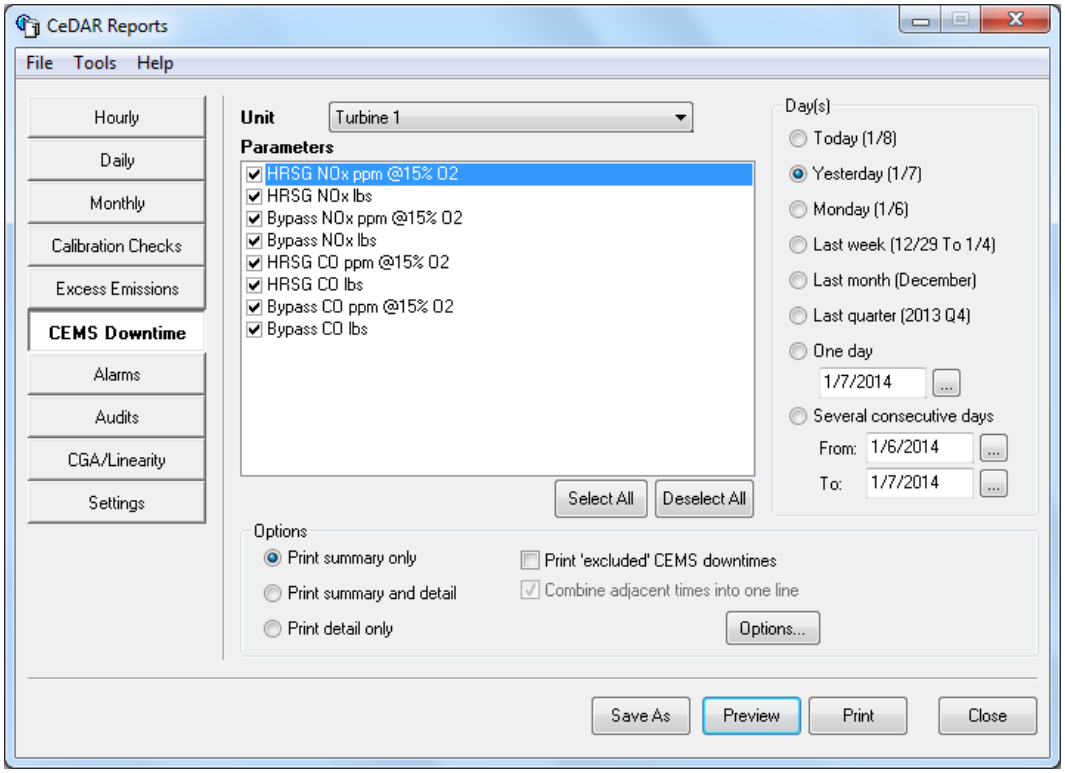
When color is enabled, "excludable" excess emissions appear in blue on the report.

Conflicts

Conflicts may appear on a separate page at the end of the report. Conflicts indicate an inconsistency in the data and should be resolved.

CEMS Downtime Reports

CEMS downtime reports display information for times when an emissions monitoring system or other monitor was not operating or collecting valid data.



Print summary only

When this option is selected, the report includes a summary page for each parameter.

Unit-4 CEMS Downtime Summary

Demo Facility

Opacity % 6-Min Avg CEMS Downtime for 11/1/2013 thru 11/30/2013

Reason	Duration
Other known causes	1 hour, 24 minutes

Total duration of Opacity % 6-Min Avg CEMS downtime	1 hour, 24 minutes
Total operating time	652 hours, 54 minutes
Operating time with CEMS downtime	0.2%

Note

The total operating time is derived from the monitor codes. Different parameters may display different operating times for the same date range. This occurs if the monitor codes are inconsistent, for

example, when one parameter has an *online* monitor code and a different parameter has an *offline* monitor code for the same date/time.

Print summary and detail

When this option is selected, the report includes a summary page for each parameter. The report also includes a detail page for each parameter that had CEMS downtimes.

Print detail only

When this option is selected, the report includes a detail page for each parameter.

Unit-4 CEMS Downtime
Demo Facility
Opacity % 6-Min Avg CEMS Downtime for 11/1/2013 thru 11/30/2013

Parameter	Start	End	Duration	Reason	Action
Opacity % 6-Min Avg	11/15/2013 9:24 AM	10:47 AM	1 hour, 24 minutes	Other known causes	QA Audit Completed Quarterly Opacity Audit
Total duration			1 hour, 24 minutes		

Print 'excluded' CEMS downtimes

CEMS downtimes can be marked as "excluded" in the Cedar Data Editor. "Excluded" items do not appear in this report unless this box is checked.

Combine adjacent times into one line

When this box is checked, CEMS downtimes that are immediately adjacent in time are combined into one line on the report.

This option only applies to detail reports.

This example shows some CEMS downtimes that are adjacent, but on separate lines.

Unit-4 CEMS Downtime
Demo Facility
Opacity % 6-Min Avg CEMS Downtime for 11/1/2013 thru 11/30/2013

Parameter	Start	End	Duration	Reason
Opacity % 6-Min Avg	11/15/2013 9:24 AM	9:29 AM	6 minutes	Other known causes
Opacity % 6-Min Avg	11/15/2013 9:30 AM	9:35 AM	6 minutes	Other known causes
Opacity % 6-Min Avg	11/15/2013 9:36 AM	9:41 AM	6 minutes	Other known causes

This example shows the same CEMS downtimes combined on one line.

Unit-4 CEMS Downtime
Demo Facility
Opacity % 6-Min Avg CEMS Downtime for 11/1/2013 thru 11/30/2013

Parameter	Start	End	Duration	Reason
Opacity % 6-Min Avg	11/15/2013 9:24 AM	10:47 AM	1 hour, 24 minutes	Other known causes

Options button

Click the Options button to see additional options for CEMS downtime reports. The options are also available by clicking the Tools > Options menu and selecting the Excess Emissions and CEMS Downtimes tab.

Color

CEMS downtime detail reports support color. To enable color, click the Tools > Options menu, and check the "Use color on reports where appropriate" box on the General tab.

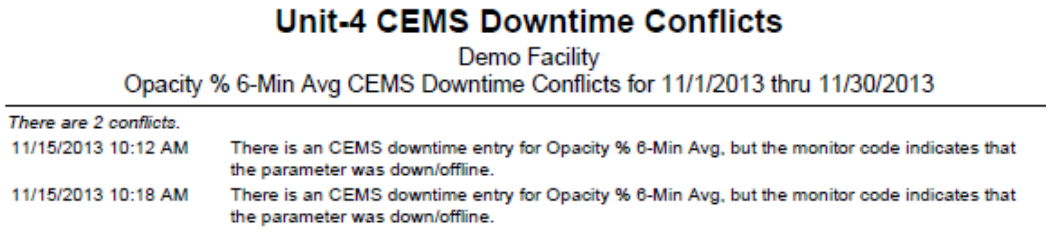
When color is enabled, "excludable" CEMS downtimes appear in blue on the report.

Conflicts

Conflicts may appear on a separate page at the end of the report. Conflicts indicate an inconsistency in the data and should be resolved.

Conflicts in Excess Emission and CEMS Downtime Reports

When the "Print log of any operating-time conflicts" option is selected, the report generator checks for conflicts between the monitor codes and the excess emissions or CEMS downtimes. Any conflicts appear on a separate page at the end of the report.



Unit-4 CEMS Downtime Conflicts

Demo Facility

Opacity % 6-Min Avg CEMS Downtime Conflicts for 11/1/2013 thru 11/30/2013

There are 2 conflicts.

11/15/2013 10:12 AM	There is an CEMS downtime entry for Opacity % 6-Min Avg, but the monitor code indicates that the parameter was down/offline.
11/15/2013 10:18 AM	There is an CEMS downtime entry for Opacity % 6-Min Avg, but the monitor code indicates that the parameter was down/offline.

A conflict exists when:

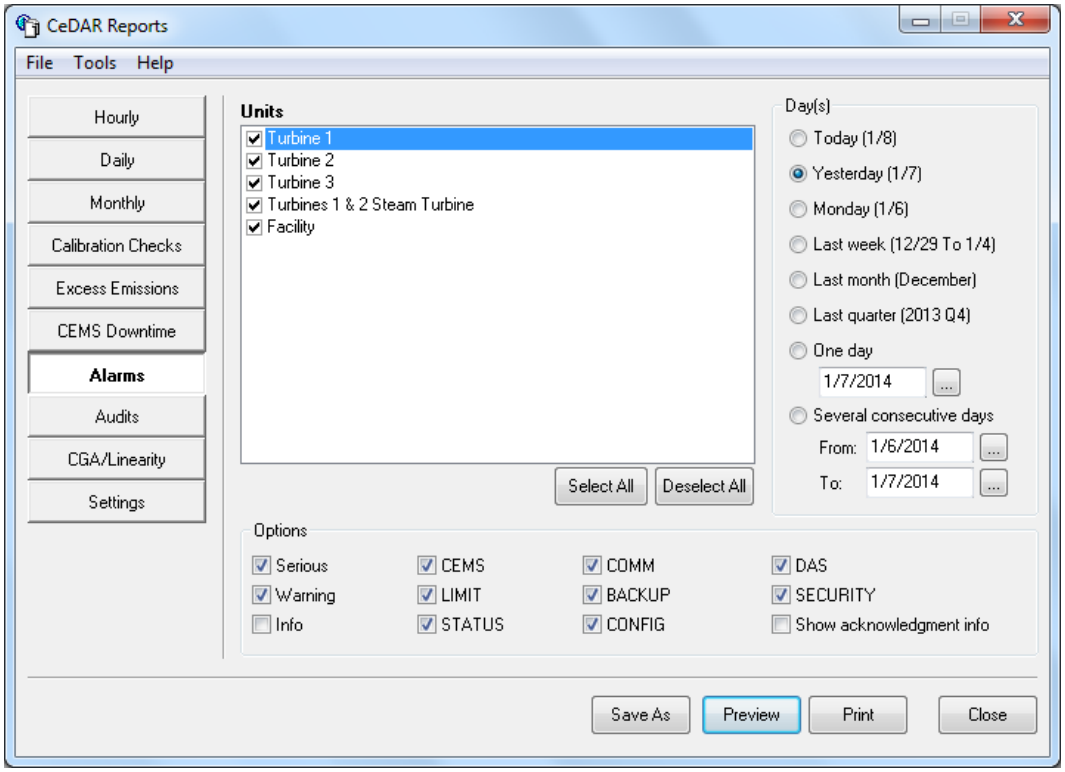
- There is an excess emission but the monitor code indicates the unit is offline or the data is invalid.
- There is a CEMS downtime but the monitor code indicates the unit is offline or the data is valid.

Conflicts can be resolved by editing the monitor codes and/or by rebuilding the excess emissions or CEMS downtimes.

This option applies to summary reports and detail reports.

Alarm Reports

Alarm reports display alarm data for a selected time period.



Here is an example of an alarm report.

Alarms

Demo Facility

LIMIT, COMM, STATUS, Serious and Warning Alarms for 2/7/2014

Alarm	Type	Priority	Date/Time On	Date/Time Off
Turbine 1: HRSG NH3 Slip lb/hr Cmt-Hr	LIMIT	Warning	2/7/2014 10:40 AM	(same)
Turbine 1: HRSG NH3 Slip lb/hr Cmt-Hr	LIMIT	Warning	2/7/2014 10:50 AM	(same)
Turbine 1: HRSG NH3 Slip lb/hr Cmt-Hr	LIMIT	Warning	2/7/2014 11:10 AM	(same)

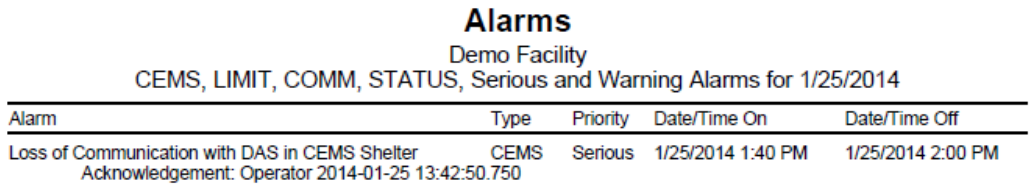
Options: alarm severity and category

Several checkboxes list the alarm severities and categories. The report only displays alarms with the selected alarm severities and categories.

Show acknowledgment info

When "Show acknowledgement info" is checked, the report displays acknowledgement information for alarms that were acknowledged. The report displays the user's logon name and the time when the user acknowledged each alarm. One alarm may be acknowledged by multiple users. Serious and warning alarms can be acknowledged. Info alarms do not need to be acknowledged.

Here is an example of an alarm report with acknowledgement information.



Alarms

Demo Facility

CEMS, LIMIT, COMM, STATUS, Serious and Warning Alarms for 1/25/2014

Alarm	Type	Priority	Date/Time On	Date/Time Off
Loss of Communication with DAS in CEMS Shelter Acknowledgement: Operator 2014-01-25 13:42:50.750	CEMS	Serious	1/25/2014 1:40 PM	1/25/2014 2:00 PM

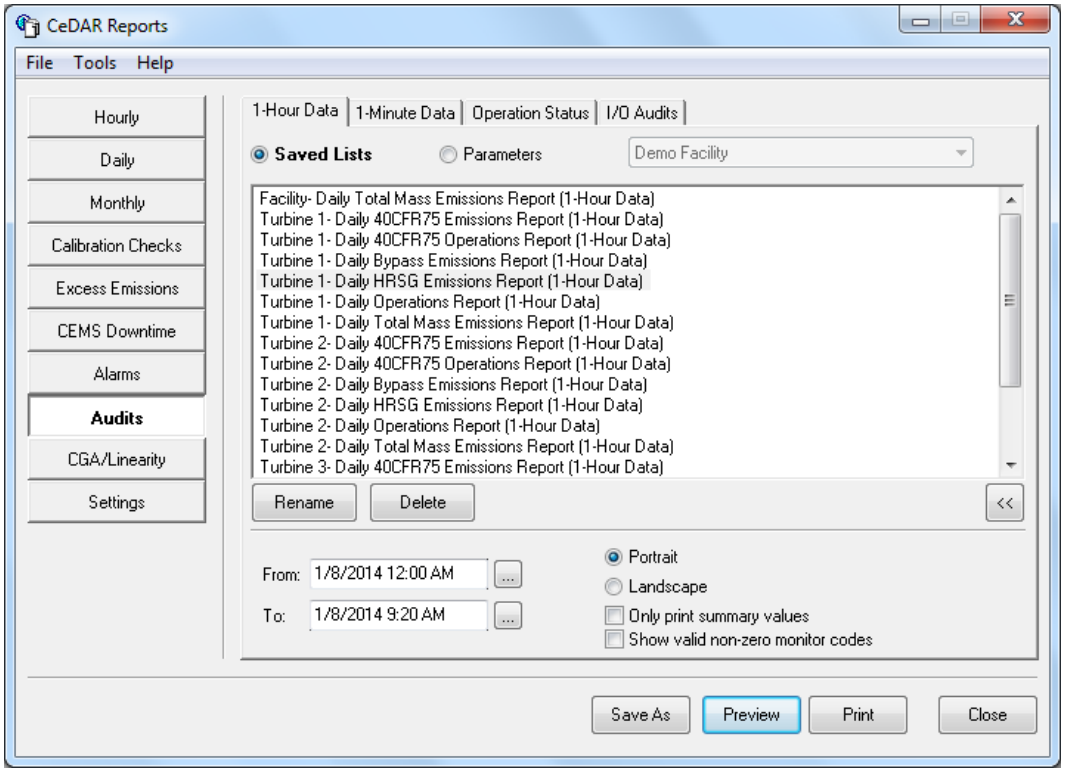
Color

Alarm reports support color. To enable color, click Tools > Options, and check the "Use color on reports where appropriate" box on the General tab.

Limit alarms appear in magenta. Serious alarms appear in red.

Audit Reports

The Audit category includes reports for several types of data.



1-Hour Data and 1-Minute Data

These reports provide the 1-hour and 1-minute data available in Cedar.

Operation Status

Operation status reports are based on the monitor codes of 1-minute data.

I/O Audits

I/O audits collect CEMS data at a high frequency, and can be useful for certification and diagnostics. An I/O audit can be started in the Data Monitor.

Audit Reports: 1-Hour and 1-Minute

These reports display 1-hour and 1-minute data that is available in Cedar.

Here is an example of a 1-hour audit report.

CeDAR 1-Hour Data

Demo Facility
Data for 12/18/2013 7 AM thru 12/18/2013 10 AM

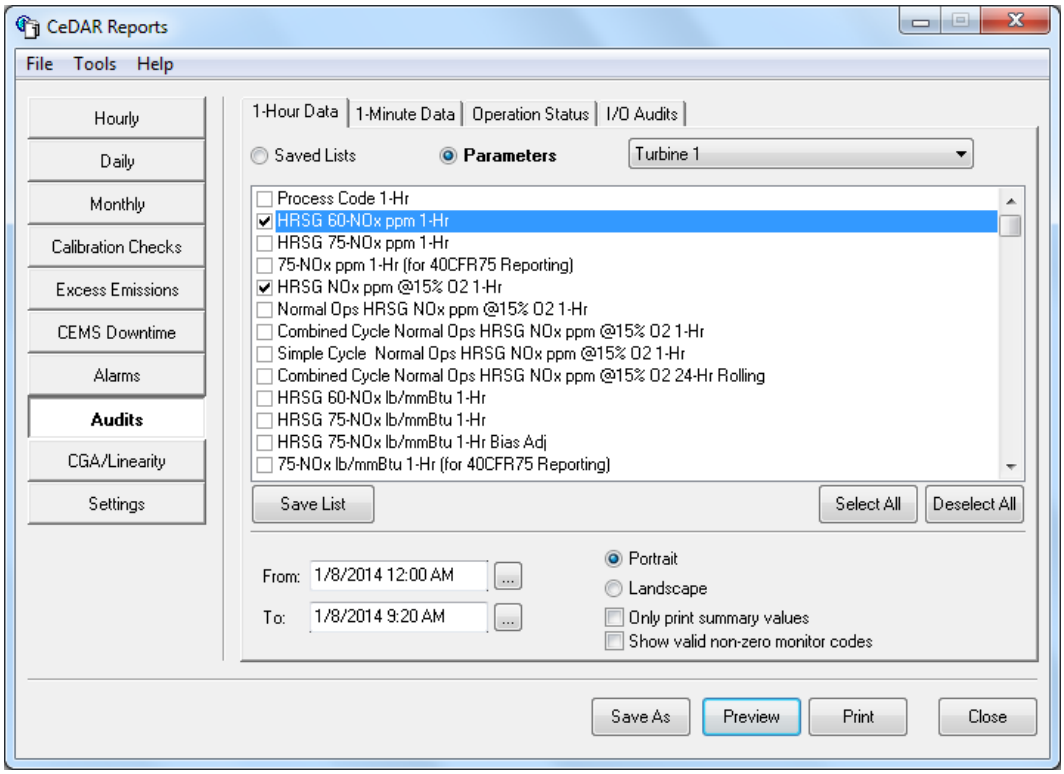
Timestamp	(Turbine 1) Process Code 1-Hr	(Turbine 1) HRSG 60-NOx ppm 1-Hr	(Turbine 1) HRSG NOx ppm @15% O2 1-Hr	(Turbine 1) HRSG 60-NOx lb/mmBtu 1-Hr	(Turbine 1) HRSG NOx lbs 1-Hr	(Turbine 1) HRSG CO ppm 1-Hr
12/18/13 7 AM	8	2.21	1.87	0.0069	12.96	0.88
12/18/13 8 AM	8	2.16	1.84	0.0068	11.46	0.93
12/18/13 9 AM	8	2.18	1.86	0.0068	11.68	1.17
12/18/13 10 AM	8	2.18	1.87	0.0069	11.00	1.00
Average (all)	--	2.18	1.86	0.0069	11.78	1.00
Total (all)	--	--	--	--	47.10	--
Minimum (all)	--	2.16	1.84	0.0068	11.00	0.88
Maximum (all)	--	2.21	1.87	0.0069	12.96	1.17
Average (valid values only)	--	2.18	1.86	0.0069	11.78	1.00
Total (valid values only)	--	--	--	--	47.10	--
Count (valid values only)	--	4	4	4	4	4

Parameters

Select the Parameters option to display the available 1-hour or 1-minute parameters.

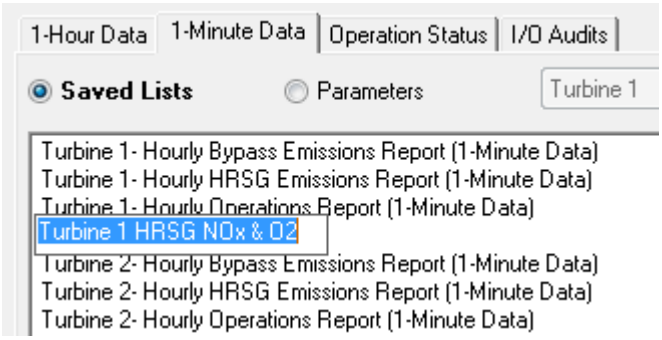
Select the unit from the drop-down list. Select "All units" to display parameters from multiple units on one report.

Select the parameters to include in the report. The Select All and Deselect All buttons affect the entire list of parameters.



Save List button

To save the list of parameters for future use, click Save List. The parameter list is saved as a new entry under "Saved Lists". Enter a name for the new list.

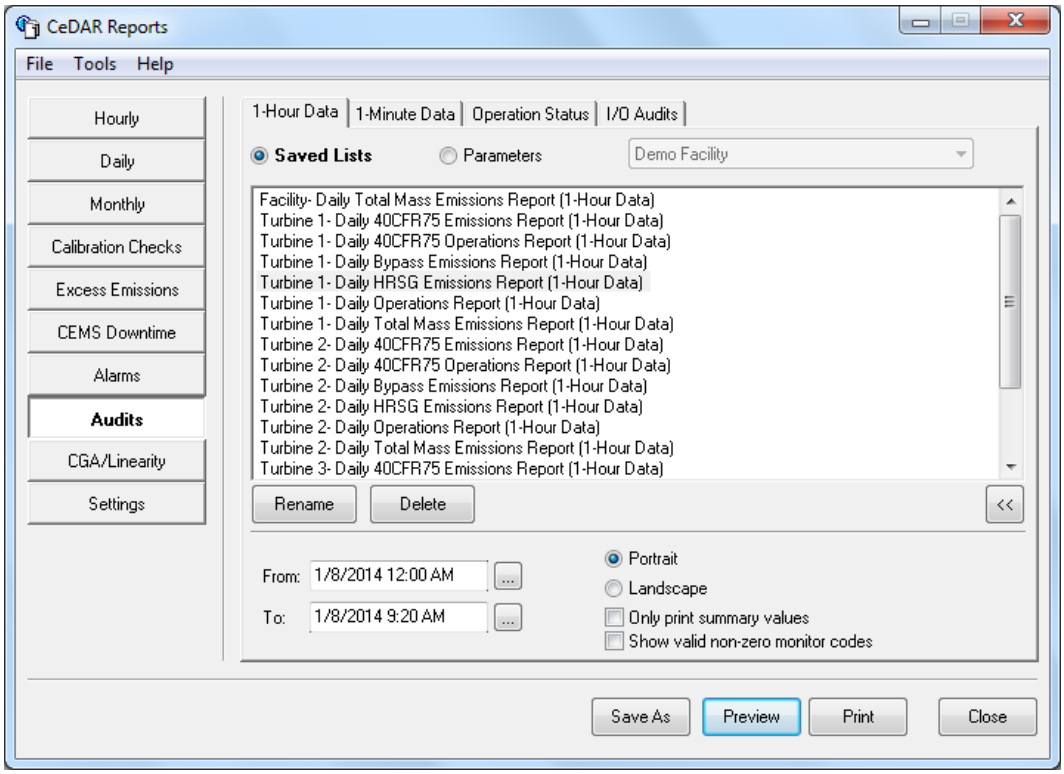


Saved Lists

When "Saved Lists" is selected, the lists of pre-selected parameters are available.

If the 1-Hour Data tab is selected, there is also an entry for each daily report that has 1-hour detail data. This allows you to print the same 1-hour data that is on a daily report, but for a custom time period.

If the 1-Minute Data tag is selected, there is also an entry for each hourly report that has 1-minute detail data. Again, this allows you to print the same 1-minute data that is on an hourly report, but for a custom time period.



Click Rename to rename a custom list of saved parameters. Daily and hourly reports cannot be renamed from this window.

Options

Only print summary values

When "Only print summary values" is checked, the report only displays the aggregate (average, total, minimum, maximum) values. The report does not display the detail data.

Show valid non-zero monitor codes

When this box is unchecked (the default), the report only displays monitor codes for data that is invalid or offline. The report does not display monitor codes for valid data.

When this box is checked, the report displays monitor codes for valid data, except monitor code 00.

Monitor Codes

This report displays monitor codes in brackets next to the data point.

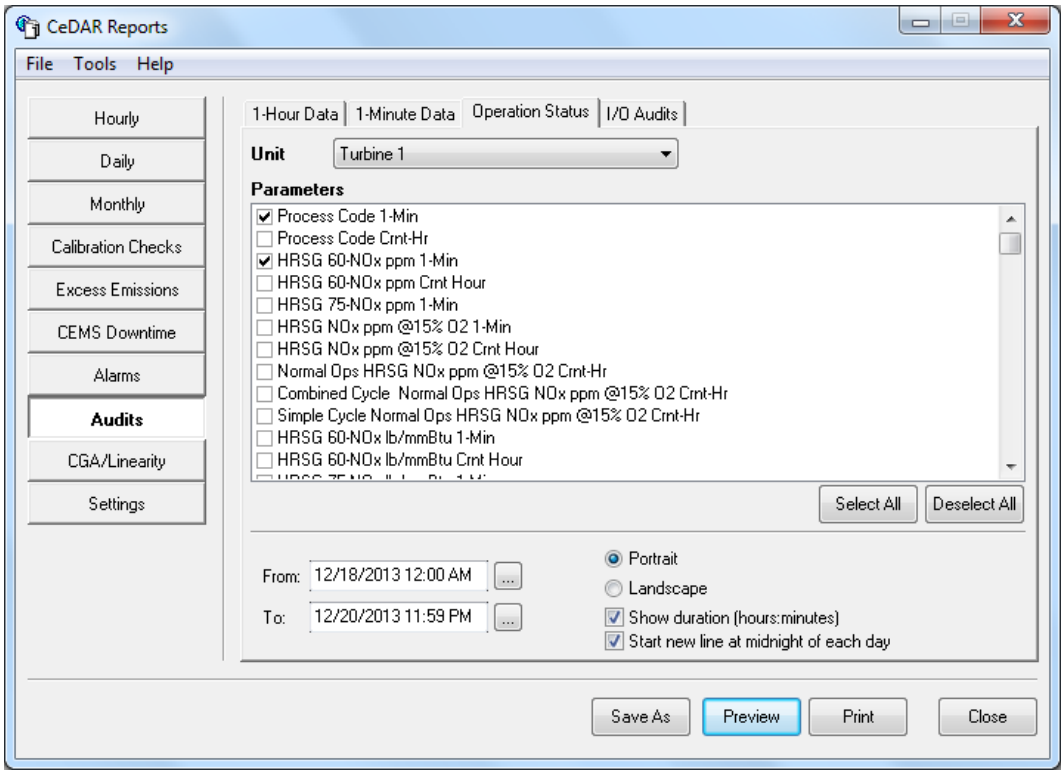
Timestamp	(Turbine 1) HRSG 60-NOx ppm 1-Min	(Turbine 1) HRSG 60-NOx lb/mmBtu 1-Min	(Turbine 1) HRSG 60-O2% 1-Min
12/20 7:26	2.20	0.0069	14.00
12/20 7:27	2.19	0.0069	14.01
12/20 7:28	2.19	0.0069	14.00
12/20 7:29	2.20	0.0069	14.01
12/20 7:30	2.22	0.0070	14.01
12/20 7:31	2.88 <14>	0.0072 <14>	12.22 <14>
12/20 7:32	0.58 <14>	0.0006 <14>	1.20 <14>
12/20 7:33	0.00 <14>	0.0000 <14>	0.27 <14>
12/20 7:34	0.00 <14>	0.0000 <14>	0.14 <14>

A legend at the end of the report shows the descriptions of all monitor codes that appear in the report.

<13> = Down
<14> = Calibration Check
<28> = Formula Input Out-Of-Range

Audit Reports: Operation Status

Operation status reports summarize 1-minute process code and monitor code data.



Here is an example of an operation status report.

Operation Status

Demo Facility

12/18/2013 thru 12/20/2013

Time	Duration (hr:min)	(Turbine 1) Process Code 1-Min	(Turbine 1) HRSG 60-NOx ppm 1-Min
12/18/2013 00:00 - 09:15	9:16	Normal Operation	Valid
12/18/2013 09:16 - 09:35	0:20	Normal Operation	Calibration Check
12/18/2013 09:36 - 10:00	0:25	Normal Operation	Valid
12/18/2013 10:01 - 10:20	0:20	Normal Operation	Calibration Check
12/18/2013 10:21 - 20:47	10:27	Normal Operation	Valid
12/18/2013 20:48 - 20:58	0:11	Shutdown	Valid
12/18/2013 20:59 - 23:59	3:01	Process Down	Down
12/19/2013 00:00 - 23:59	24:00	Process Down	Down
12/20/2013 00:00 - 04:45	4:46	Process Down	Down
12/20/2013 04:46 - 05:31	0:46	Control Equipment Malfunction	Down
12/20/2013 05:32 - 05:59	0:28	Process Down	Down
12/20/2013 06:00 - 06:43	0:44	Control Equipment Malfunction	Valid
12/20/2013 06:44 - 07:30	0:47	Normal Operation	Valid
12/20/2013 07:31 - 07:50	0:20	Normal Operation	Calibration Check

Show duration

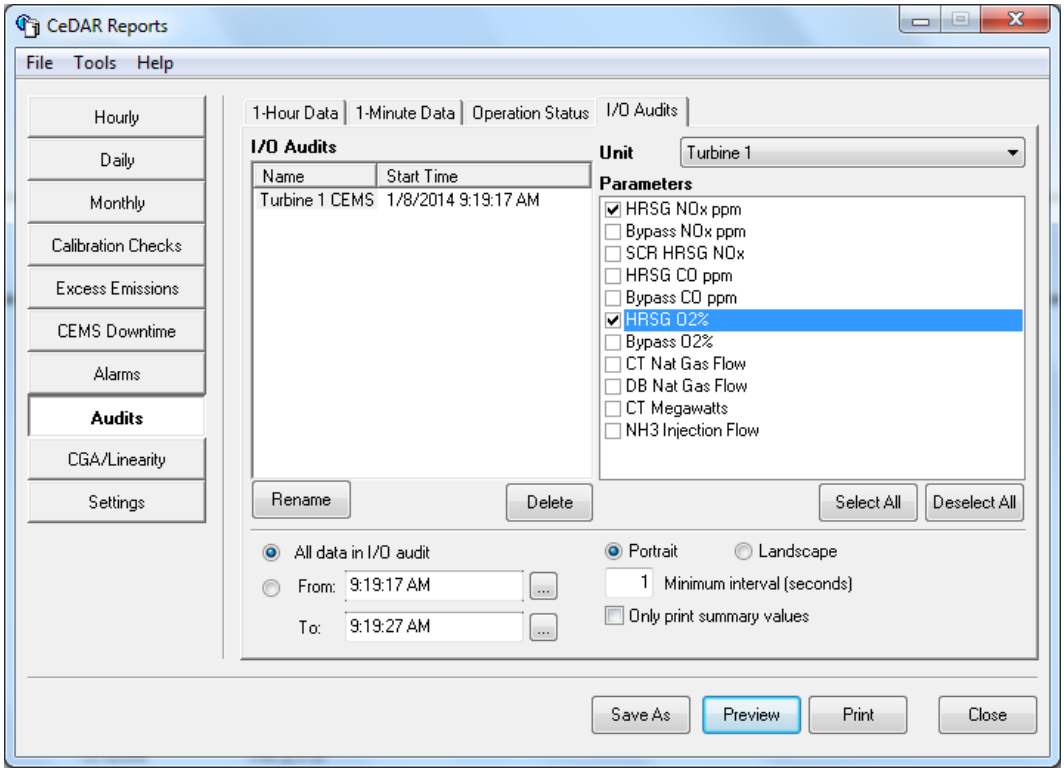
When this option is selected, the report includes a Duration column with hours and minutes.

Start new line at midnight

When this box is checked, adjacent data on the same day are combined. Adjacent monitor codes on different days are not combined. This option can make reports easier to read, since it is very clear where a new day begins.

Audit Reports: I/O Audits

I/O audits collect CEMS data at a high frequency, and can be useful for monitoring system certification and diagnostics. An I/O audit can be started in the Data Monitor.



Here is an example of an I/O Audit report.

I/O Audit Data

Demo Facility

Data for 1/8/2014 9:19:17 AM thru 1/8/2014 9:19:27 AM

Timestamp	(Turbine 1) HRSG NOx ppm	(Turbine 1) HRSG O2%
9:19:17 AM	6.020	14.230
9:19:18 AM	6.020	14.230
9:19:19 AM	6.020	14.230
9:19:20 AM	6.020	14.230
9:19:22 AM	5.973	--
9:19:23 AM	5.973	14.241
9:19:24 AM	--	14.241
9:19:26 AM	5.973	14.241
Average	6.000	14.235
Minimum	5.973	14.230
Maximum	6.020	14.241

Note

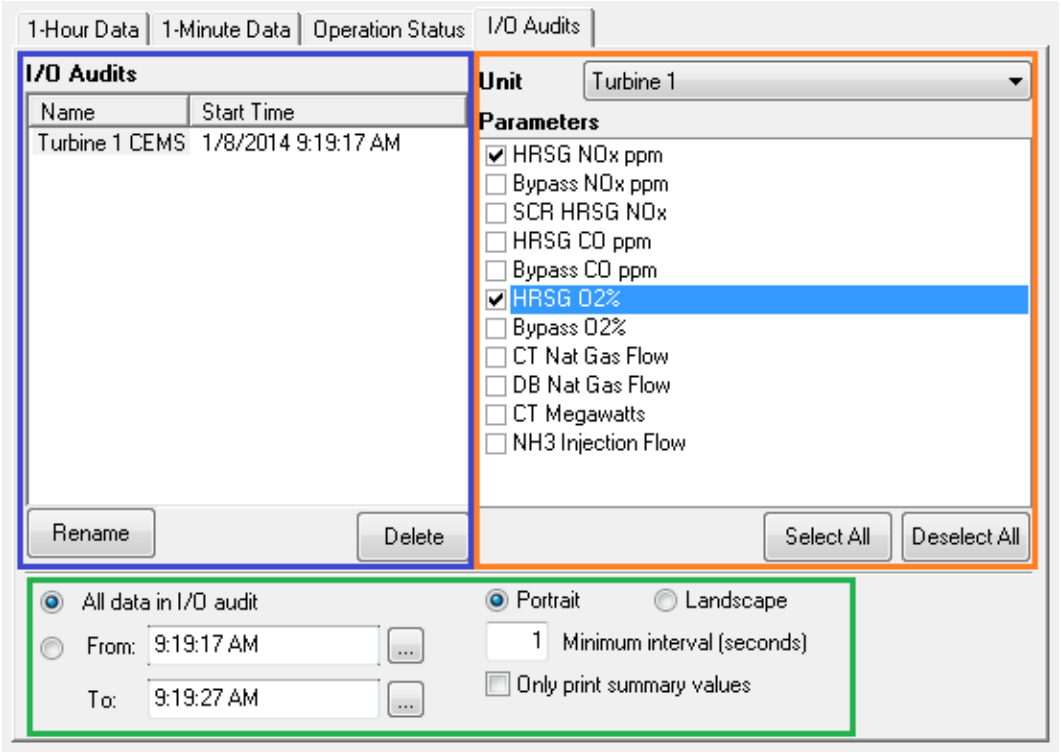
Gaps in the data, indicated by dashes or missing times, are normal. Cedar is limited by the communication speed and the quantity of data that it must read from the CEMS in addition to the I/O audit data. During an I/O audit, Cedar attempts to read the selected data as frequently as possible. Cedar may not able to read all the CEMS data every second.

How to run an I/O Audit report

First select an I/O audit in the list (highlighted in blue).

Next, select the unit and parameters for the report (highlighted in orange). The available unit(s) and parameter(s) were determined when the user started the I/O audit in the Data Monitor.

Finally, select the time range and options (highlighted in green).



Options

Time range

If "All data in I/O audit" is selected, the report displays data for the entire duration of the I/O audit. I/O audit reports can be very lengthy because they can include a large number of data points. In many cases, it is better to narrow the time range using the From and To boxes.

When you select an I/O audit in the list, the From and To boxes change to indicate the time of the earliest and latest data points in the I/O audit. If you enter a time range that is outside the range of the I/O audit, you will only see data points that are within the I/O audit time frame.

Minimum interval (seconds)

I/O audit reports can be very lengthy because they can include a very large number of data points. You may want to see a data point every 5 or 10 seconds to limit the length of the report.

The default value for this option is 1. If you enter 10, for example, the data points displayed on the report will be at least 10 seconds apart.

Note

When this option is greater than 1, some columns may appear to have many missing data points. This is because Cedar could not read all the data points in the same second. Change this setting to 1 to see all the data points.

Note

Because I/O audit reports often contain large amounts of data, it can be very helpful to save the report in CSV format and open it in a spreadsheet, such as Microsoft Excel. Averages and totals can be easily calculated in a spreadsheet.

Only print summary values

When "Only print summary values" is checked, the report only displays the aggregate (average, minimum, maximum) values. The report does not display the detail data.

Rename and Delete

Click the Rename button to give an I/O audit a descriptive name.

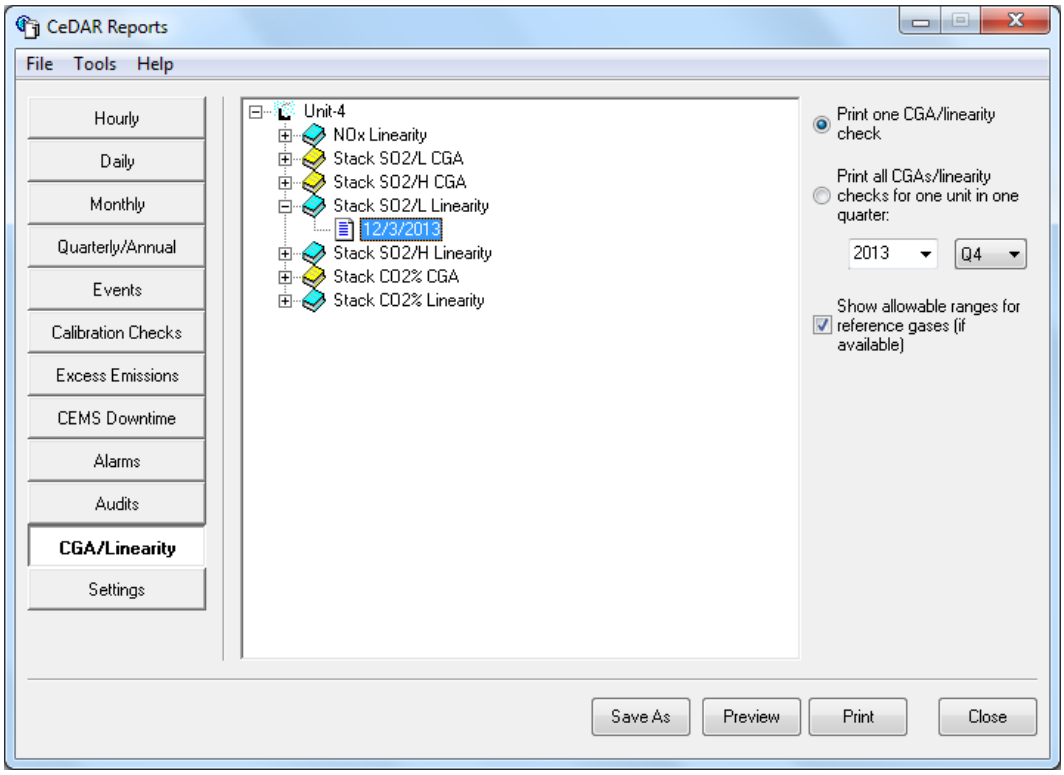
Click the Delete button to delete an I/O audit that you no longer need.

Monitor Codes

This report does not include monitor codes. I/O audits only collect data for real-time analog values. Select a 1-minute audit report if you need to see monitor codes

CGA/Linearity Check Reports

These reports display data for quarterly Cylinder Gas Audits (CGA), Linearity Checks, and similar QA tests.

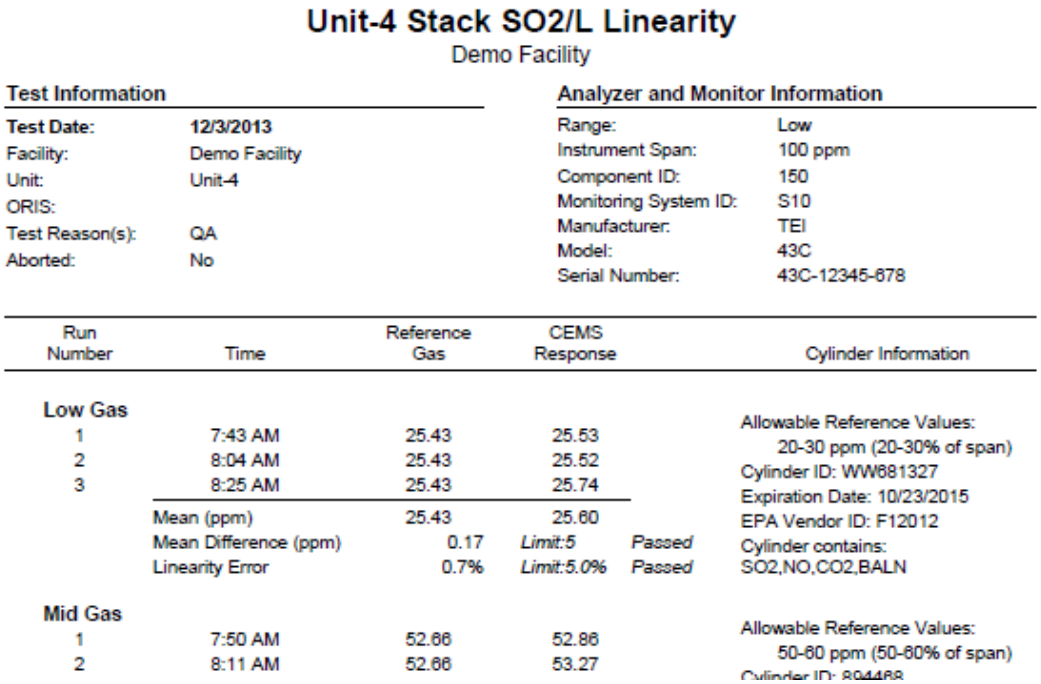


Each unit is identified with a *smokestack* icon and the name of the unit.

Click the (+) to expand the tree below the unit and view the CGA and Linearity Checks defined for that unit. *Book* icons represent each CGA or Linearity Check.

Click the (+) to expand the tree below the CGA or Linearity Check and view the individual tests that have been performed. Individual icons are represented with a *page* icon. Click a specific test to preview or print that test.

Here is an example of a linearity check report. Each CGA or linearity check appears on a separate page.



Unit-4 Stack SO2/L Linearity

Demo Facility

Test Information

Test Date:	**12/3/2013**
Facility:	Demo Facility
Unit:	Unit-4
ORIS:	
Test Reason(s):	QA
Aborted:	No

Analyzer and Monitor Information

Range:	Low
Instrument Span:	100 ppm
Component ID:	150
Monitoring System ID:	S10
Manufacturer:	TEI
Model:	43C
Serial Number:	43C-12345-678

Run Number	Time	Reference Gas	CEMS Response		Cylinder Information
Low Gas					Allowable Reference Values: 20-30 ppm (20-30% of span)
1	7:43 AM	25.43	25.53		Cylinder ID: WW881327
2	8:04 AM	25.43	25.52		Expiration Date: 10/23/2015
3	8:25 AM	25.43	25.74		EPA Vendor ID: F12012
	Mean (ppm)	25.43	25.60		Cylinder contains: SO2,NO,CO2,BALN
	Mean Difference (ppm)	0.17	*Limit:5*	*Passed*	
	Linearity Error	0.7%	*Limit:5.0%*	*Passed*	
Mid Gas					Allowable Reference Values: 50-60 ppm (50-60% of span)
1	7:50 AM	52.66	52.86		
2	8:11 AM	52.66	53.27		

Show allowable ranges for reference gases

When "Show allowable ranges for references gases" is checked, the report calculates and displays the range of allowable reference values for each gas level.

To see the allowable ranges, the analyzer information must have been entered in the Data Editor.

If color is enabled, the reference gas text is displayed in red if the reference value is outside the allowable range. To enable color, click the Tools > Options menu, and check the "Use color on reports where appropriate" box on the General tab.

Print all CGAs/linearity checks for one unit in one quarter

Select this option to include all CGAs and linearity checks for one unit and one quarter in the report. In the tree, select the unit icon, or select any book icon or individual test.

Opacity Calibration Error Test Reports

Calibration Error Tests for opacity monitors are similar to linearity checks.

Calibration error tests for opacity monitors are specified in 40 CFR 60 Appendix B Performance Specification 1. The test may have 3, 4, or 5 runs for each of 3 reference filters, for a total of 9, 12, or 15 runs.

CGT and Calibration Drift Test Reports (Canada)

Cylinder Gas Tests (CGTs) and Calibration Drift Tests are similar to linearity checks.

Quarterly CGTs

For a Cylinder Gas Test (CGT), the test reason must be "QA".

Environment Canada regulations require CGTs to be performed each quarter. CGTs are specified in Report EPS 1/RG/7 Revised, section 6.3.1.

Calibration Drift Test for CEMS certification

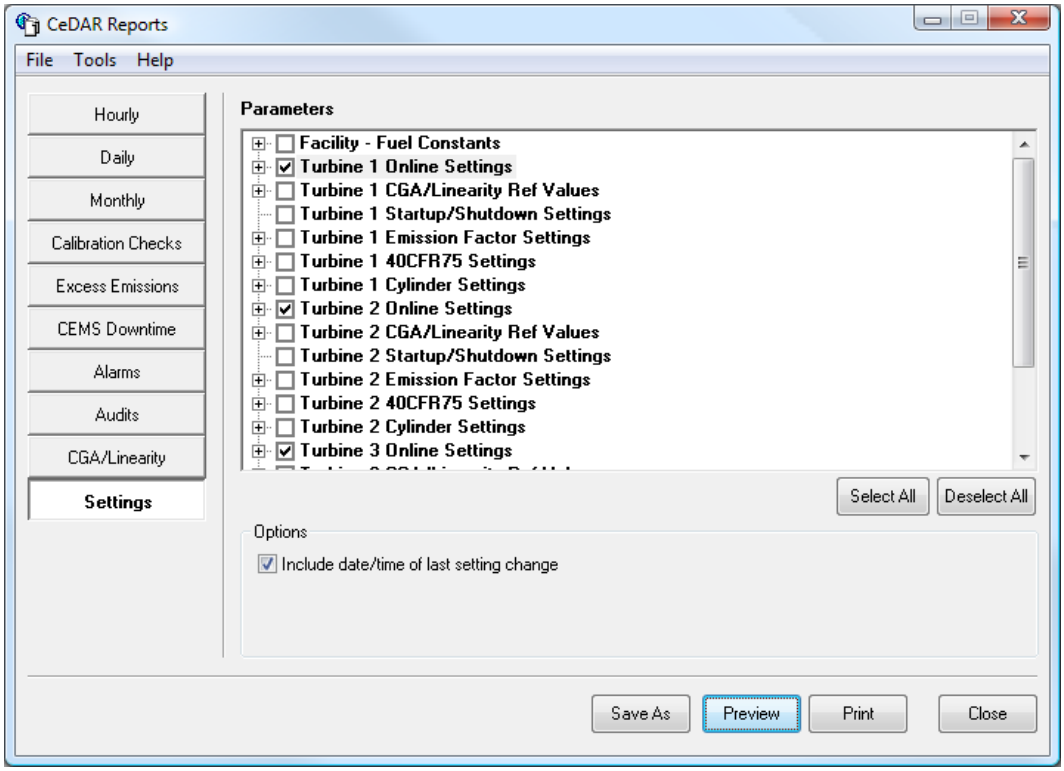
For a Calibration Drift Test, the test reason must be "Certification". The "Certification" test reason indicates the test is a Calibration Drift Test, and Cedar will use the appropriate equations and pass/fail criteria. (CGTs and Calibration Drift Tests use different equations and pass/fail criteria.)

Environment Canada regulations require daily Calibration Drift Tests during the 168-hour Operational Test Period for CEMS certification. A Calibration Drift Test involves 3 injections of 3 gases, for a total of 9 injections. Calibration Drift Tests are specified in Report EPS 1/RG/7 Revised, section 5.3.2.

Settings Reports

Settings reports display the current values of settings.

Settings are values that are specific to your facility. Settings may include daily calibration start times, fuel density settings for gas and/or oil, bias factors, on-line setpoints for fuel, water, and steam flows, and backflush intervals.



In the tree, select the settings that you want to include in the report. Click Select All or Deselect All to select or deselect all the settings in the tree.

Here is an example of a settings report.

Selected Settings

Demo Facility

Group	Setting	Value	Last changed
Turbine 1 - Online Settings			
	CT Gas Flow Online Setpoint lb/sec	2.5	10/1/2014 11:58 AM
	DB Gas Flow Online Setpoint hscf/hr	33	10/1/2014 11:58 AM
	NH3 Flow Online Setpoint lb/hr	44	10/1/2014 11:58 AM
Turbine 2 - Online Settings			
	CT Gas Flow Online Setpoint lb/sec	2.9	10/1/2014 11:58 AM
	DB Gas Flow Online Setpoint hscf/hr	29	10/1/2014 11:58 AM
	NH3 Flow Online Setpoint lb/hr	30	10/1/2014 11:59 AM

Include date/time of last setting change

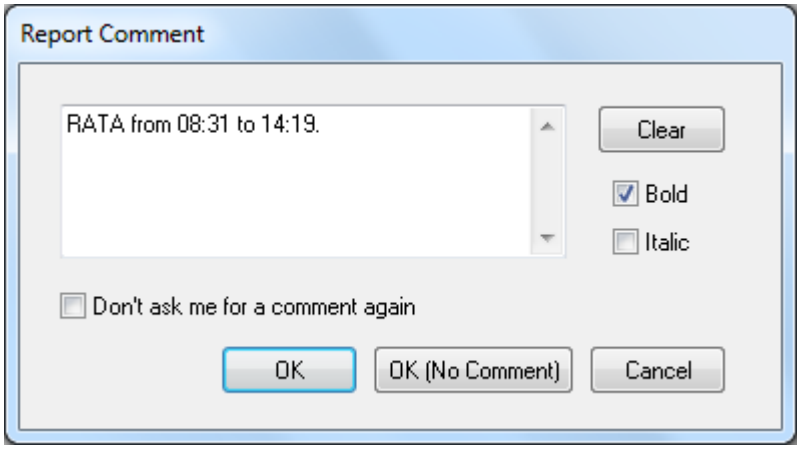
When this box is checked, the report includes the date and time the setting was most recently changed.

Report Comments

Users can optionally enter comments that appear on the bottom of a report.

To enable this feature, click the Tools > Options menu in the main Report Generator window. Select the General tab, and check the 'Allow me to enter a comment for each report' box.

When this feature is enabled, a window appears when the Print or Preview buttons are clicked.



Enter a comment, and click OK.

Here is an example of a comment on a report.

22	**Down**	996.3	**Down**
23	**Down**	996.3	**Down**
Average	12.3	997.5	66.0
Total			1385.4

Comment: RATA from 08:31 to 14:19.

To create the report with no comment, click the "OK (No Comment)" button.

To disable the comment feature, click the "Don't ask me for a comment again" box. Or, disable it in the General tab in the Options window.

Auto Reports

Reports can be configured to print at regular intervals.

To configure automatic reports, click File > Setup Auto Reports in the Report Generator menu.

These kinds of reports can be printed automatically:

- Hourly
- Daily
- Monthly
- Calibration Checks
- Event Reports
- Excess Emissions
- CEMS Downtimes
- Alarms

Start time for daily auto reports

The time when daily auto reports run can be configured in the Report Generator Options window.

Disable auto reports

For auto reports to run, the "Do NOT run auto reports" box must be unchecked in the Data Monitor Options window. In addition, the specific auto reports must be enabled in the Auto Reports window.

PDF reader for auto reports

The Cedar Report Generator creates most reports as PDF files. A PDF reader application is required to automatically print reports.

Note

Adobe Reader does not function properly under the built-in special accounts, such as Network Service, Local Service, and Local System.

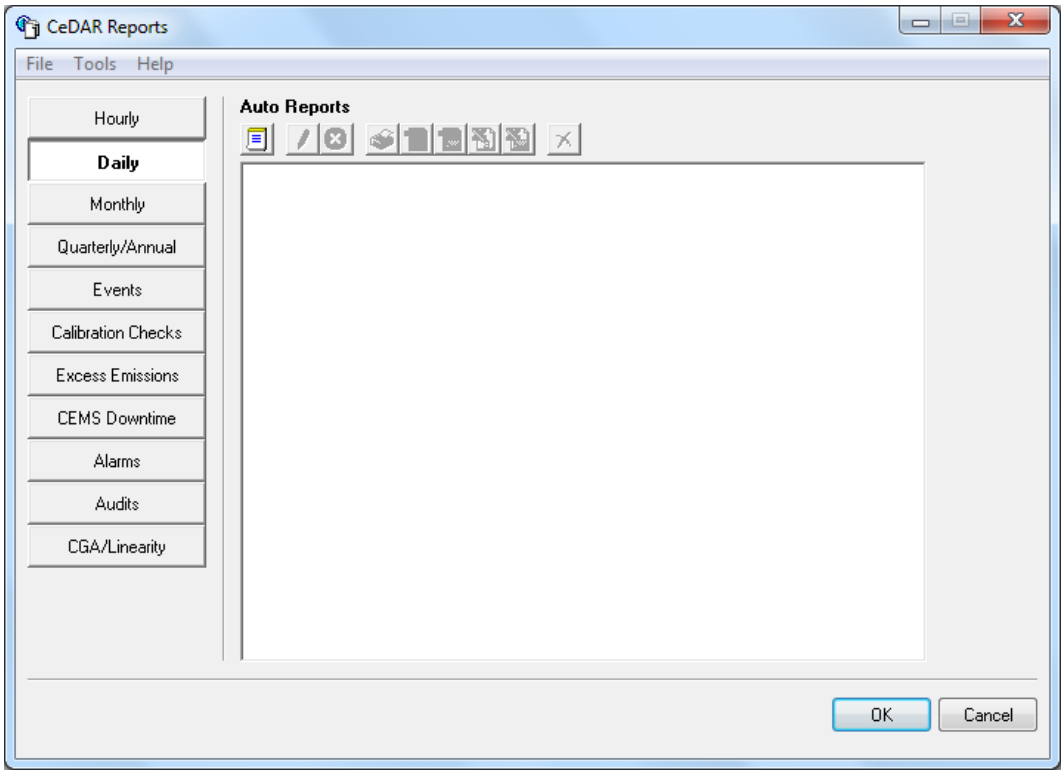
Foxit Reader is required on the DAS if auto reports will be printed from one of the built-in accounts. Foxit Reader is available from www.foxitsoftware.com.

Adobe Reader may be used if automatic reports will run under an account that has a typical profile (not a built-in account).

Both Adobe Reader and Foxit Reader may be installed, if desired.

Configuring Auto Reports

To configure automatic reports, click File > Setup Auto Reports in the Report Generator menu.



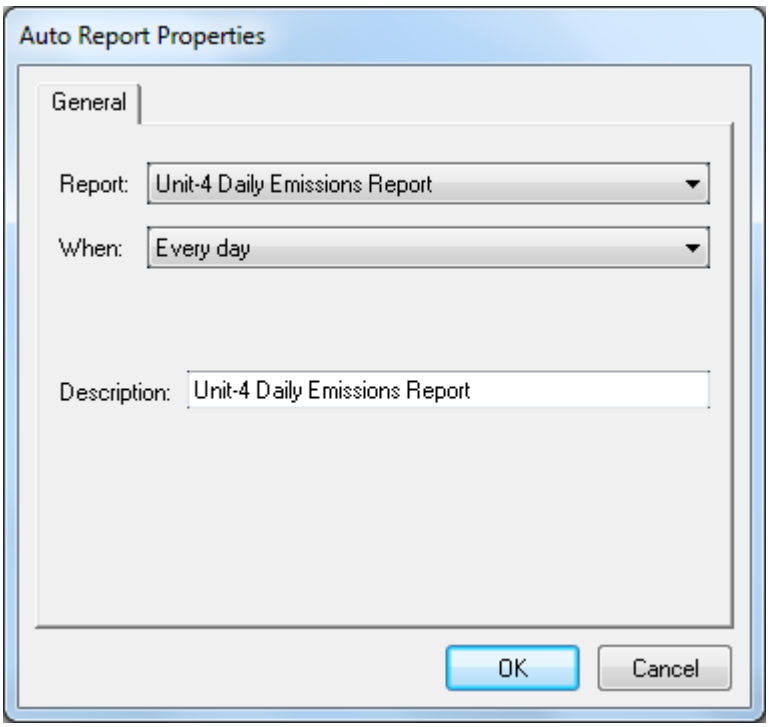
Click one of these report categories:

- Hourly
- Daily
- Monthly
- Events
- Calibration Checks
- Excess Emissions
- CEMS Downtimes
- Alarms

Adding a New Auto Report

Click  to add a new auto report to the list.

In the Auto Report Properties window, select the report to print. Select when the report should be printed.



Change the description if necessary. The report name is the default for the description. You can change this description if you want to set up the same report to run automatically with different settings. The description only appears in the auto reports listing and allows you to differentiate between modified versions of the same report.

The properties window has additional options for calibration checks, excess emissions, CEMS downtimes, and alarms.

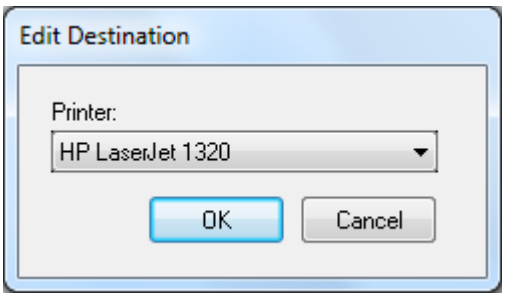
Click OK.

Cedar automatically sets the report to print to the default printer.

The new auto report appears in the list. The report destinations appear under the description.

Add Printer Destination

To send the auto report to a printer, select the auto report and click  . The Edit Destination window appears.



Select the printer and click OK.

The new printer destination appears under the auto report.

Note

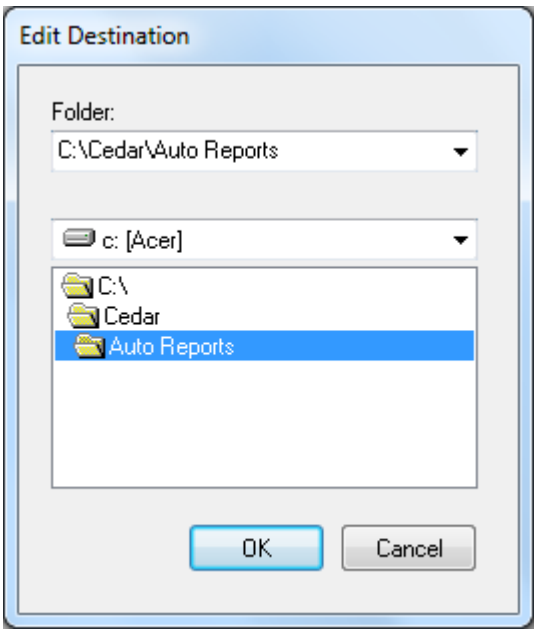
Do not select the "default printer" if auto reports will be printed from the built-in Network Service or Local Service accounts. The default printer for these accounts is often a virtual printer, such as an XPS document writer.

Select a specific printer instead of the "default printer".

The Local System account uses the default printer that is defined for "all users".

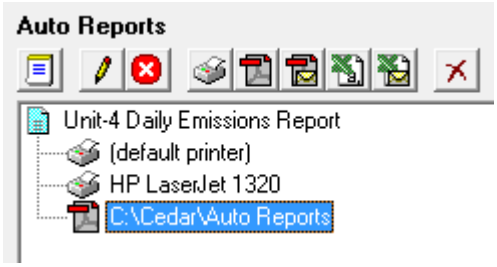
Add PDF Folder Destination

To save the auto report as a PDF file in a folder, select the auto report and click  . The Edit Destination window appears.



Choose a folder and click OK.

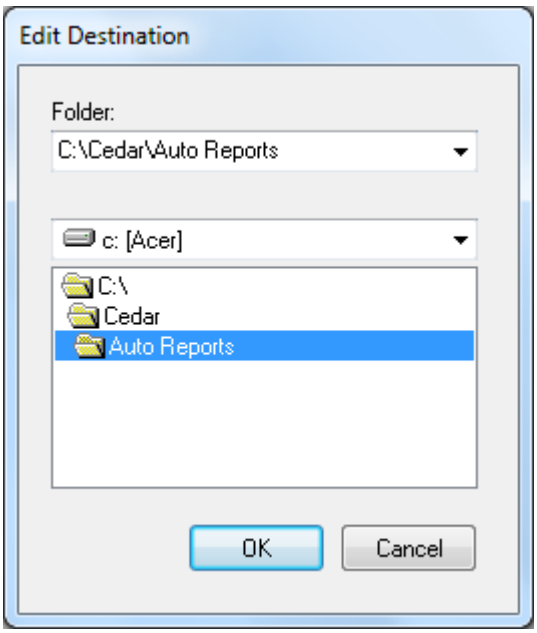
The new PDF folder destination appears under the auto report.



Add CSV Folder Destination

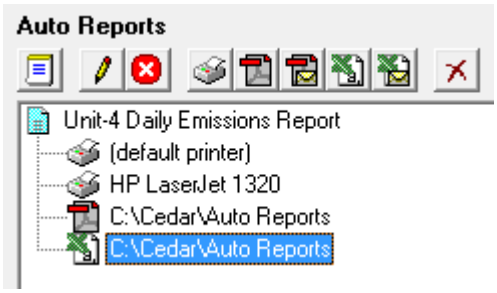
CSV files are useful for importing data into spreadsheet applications such as Microsoft Excel.

To save the auto report as a CSV file in a folder, select the auto report and click  . The Edit Destination window appears.



Choose a folder and click OK.

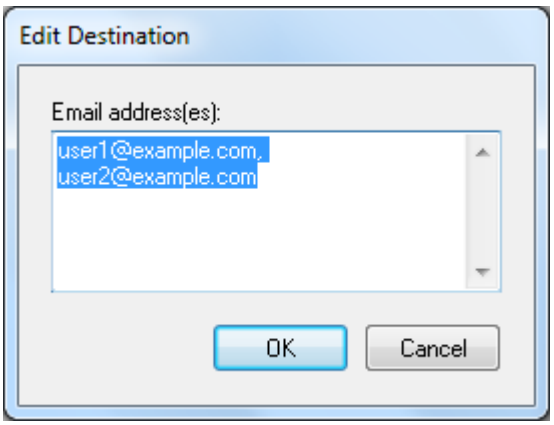
The new CSV folder destination appears under the auto report.



Add PDF Email Destination

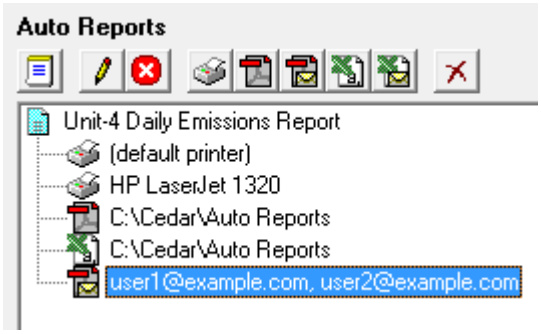
For auto report emails to work, email settings must be configured in the Report Generator Options window.

To send the auto report as a PDF email attachment, select the auto report and click  . The Edit Destination window appears.



Enter email addresses for the recipients and click OK.

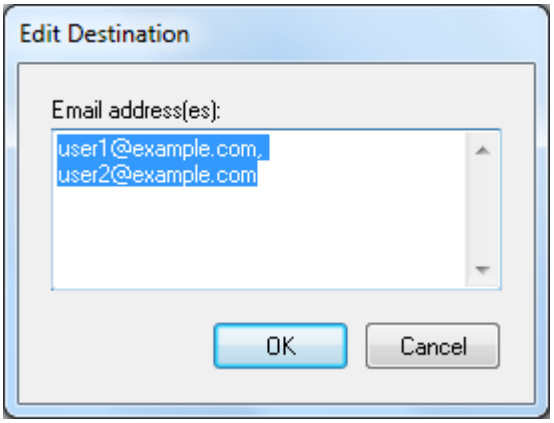
The new PDF email destination appears under the auto report.



Add CSV Email Destination

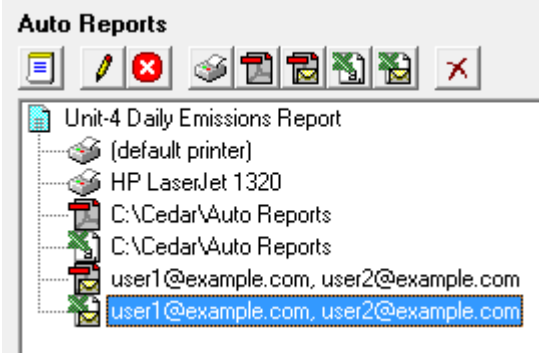
For auto report emails to work, email settings must be configured in the Report Generator Options window.

To send the auto report as a CSV email attachment, select the auto report and click  . The Edit Destination window appears.



Enter email addresses for the recipients and click OK.

The new CSV email destination appears under the auto report.



Edit Report Destination

To change a printer, file, or email destination, click on the destination and click  . A window will appear to edit the destination properties.

Remove Report Destination

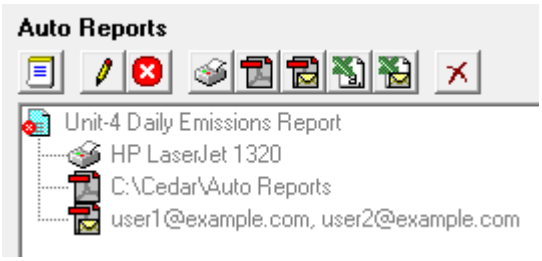
To remove a report destination (a printer, folder, or email destination), click on the destination and click  .

Be sure to click on the destination, and not on the report.

Disable/Enable Auto Report

To disable an auto report without removing it from the list, select the auto report and click  .

When an auto report is disabled, it appears with a red X and gray text.



Remove Auto Report

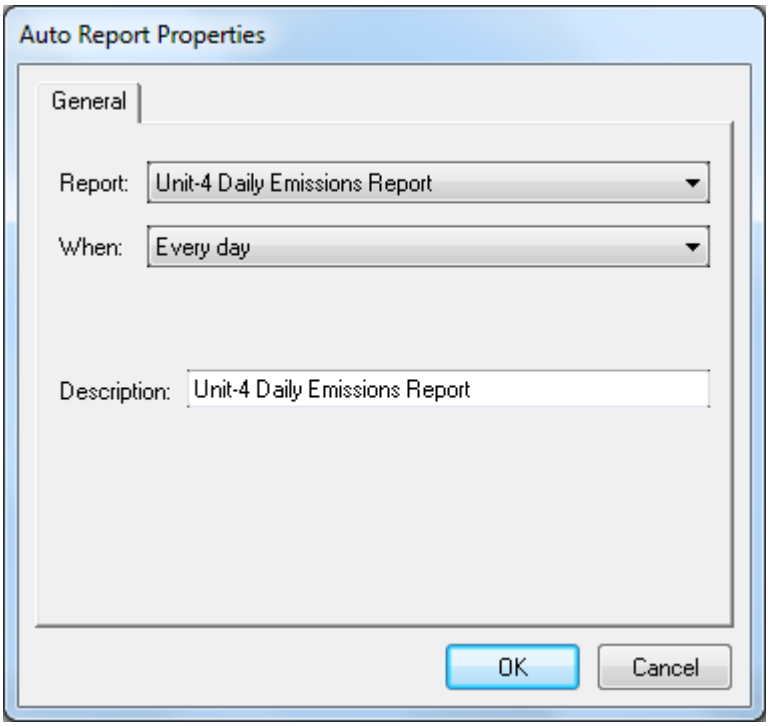
To completely remove an auto report, select the auto report and click  .

Auto Report Properties - Hourly, Daily, Monthly

These properties apply to hourly, daily, and monthly auto reports.

Select the report to print.

Select when the report should be printed.

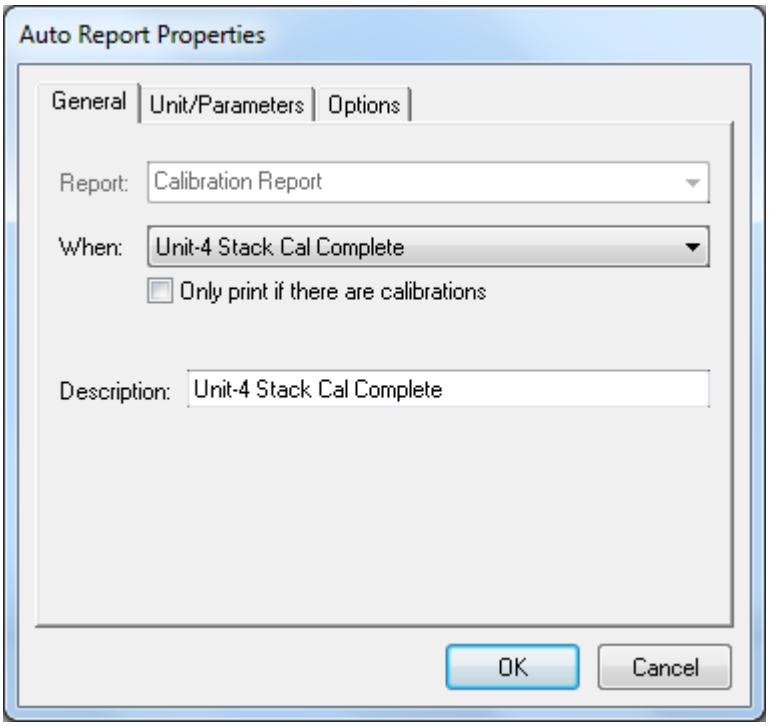


Auto Report Properties - Calibration Checks

These properties apply to calibration check auto reports.

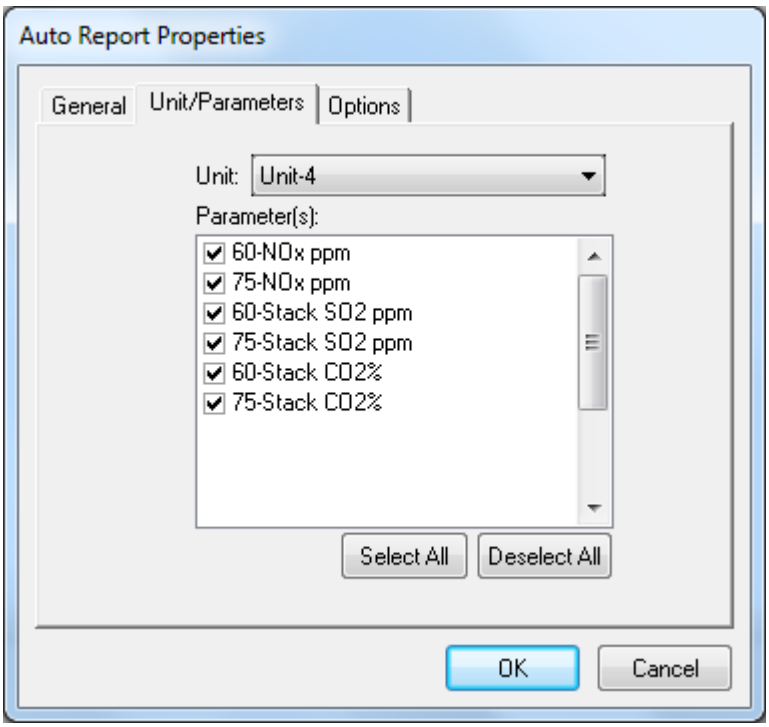
General Tab

Select when the report should be printed. If a "calibration check complete" option is selected, the Unit/Parameters and Options tabs are disabled. If "Every day" is selected, the other tabs are enabled.



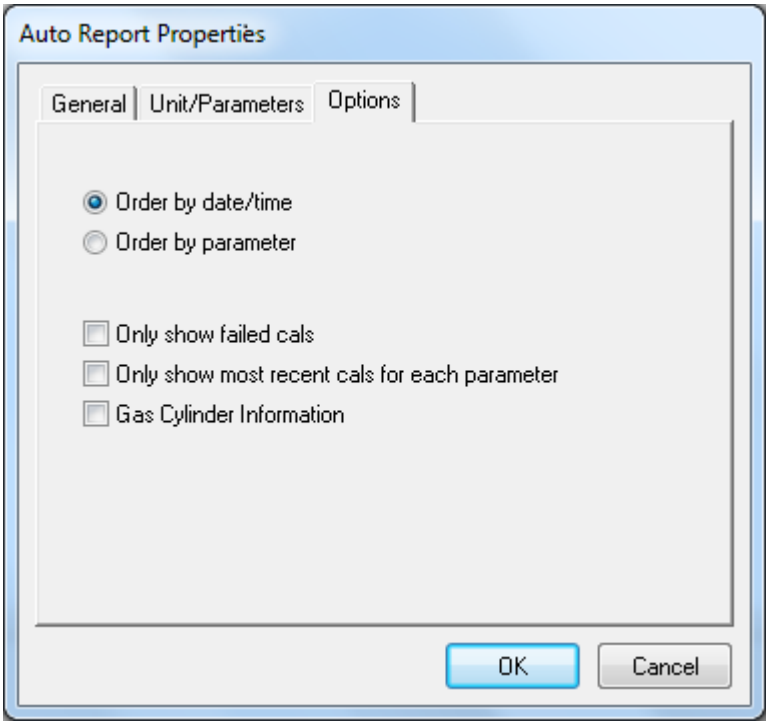
Unit/Parameters Tab

Select the unit and parameters to include in the auto report.



Options Tab

Select additional options. See the calibration checks report section for descriptions of these options.

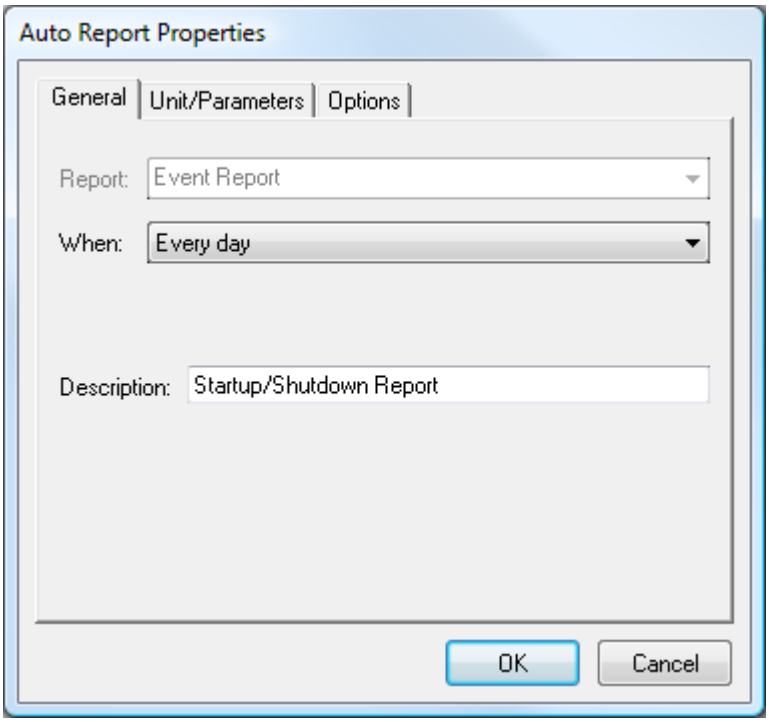


Auto Report Properties - Event Reports

These properties apply to event auto reports.

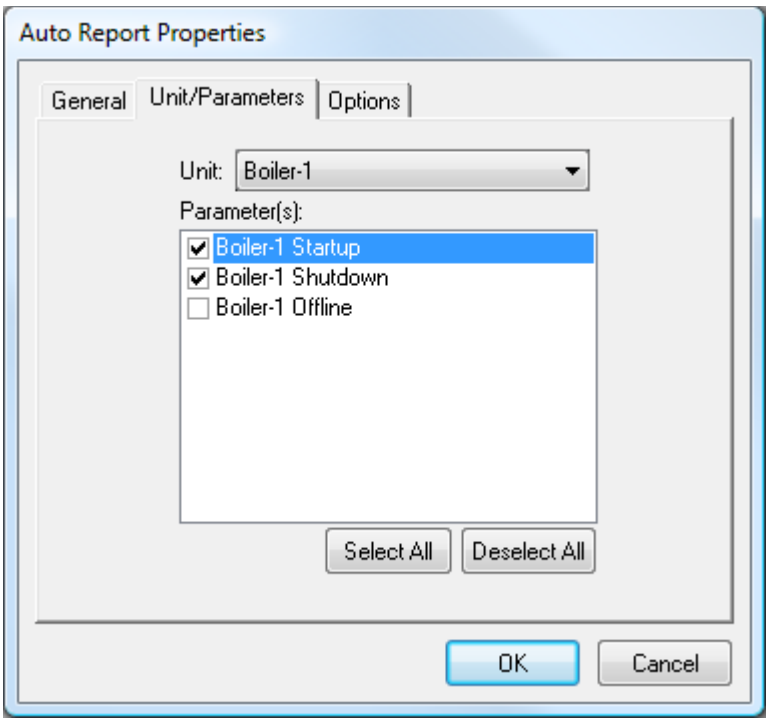
General Tab

Select when the report should be printed.



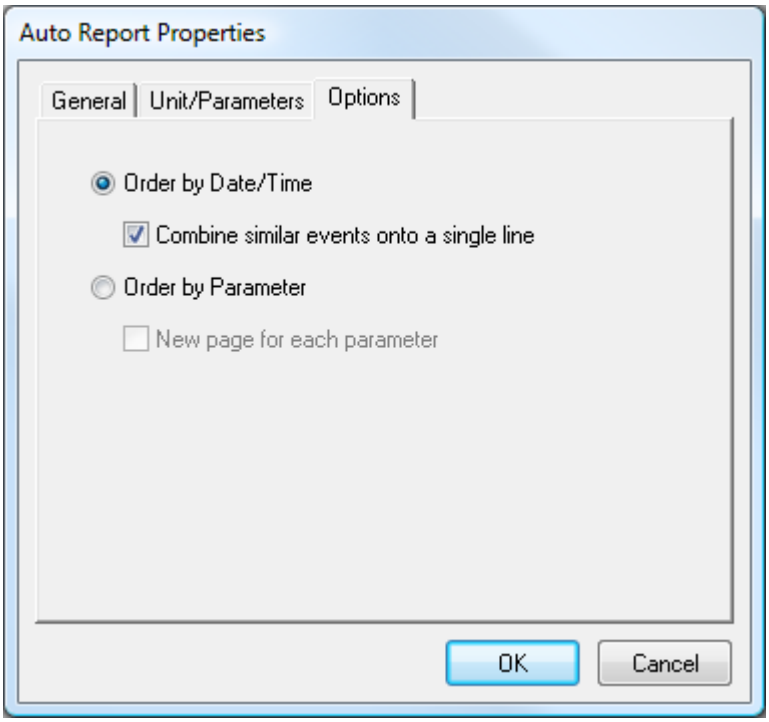
Unit/Parameters Tab

Select the unit and parameters to include in the auto report.



Options Tab

Select additional options. See the event report section for descriptions of these options.

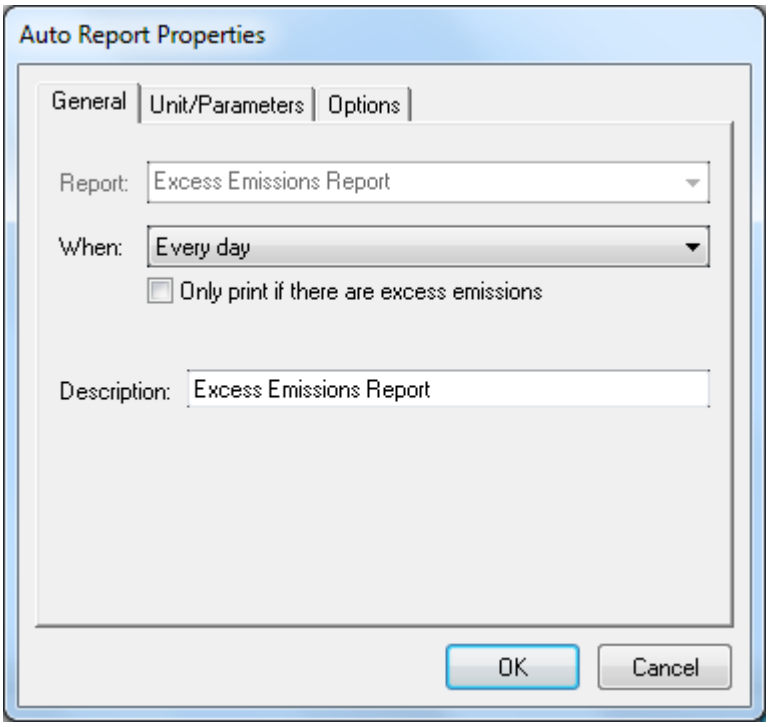


Auto Report Properties - Excess Emissions

These properties apply to excess emissions auto reports.

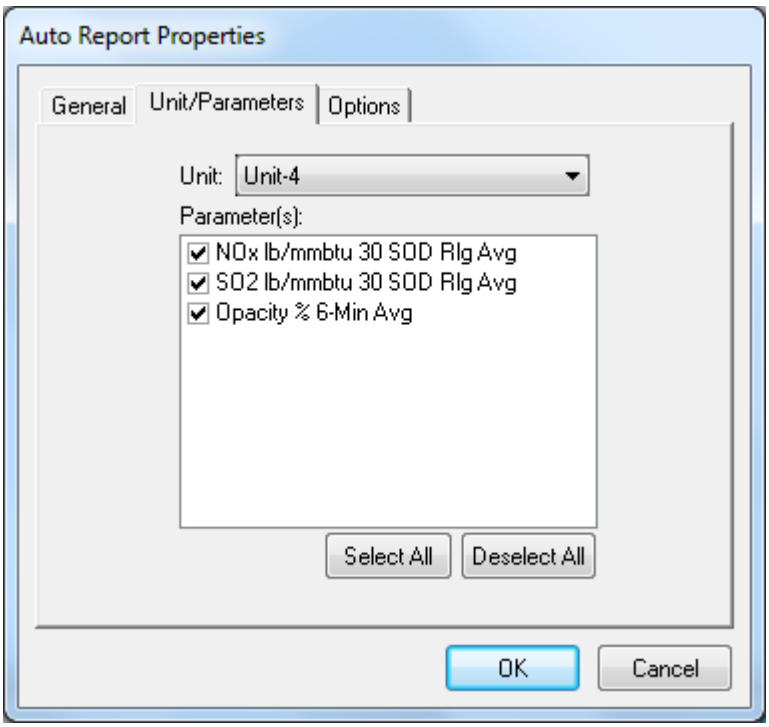
General Tab

Select when the report should be printed.



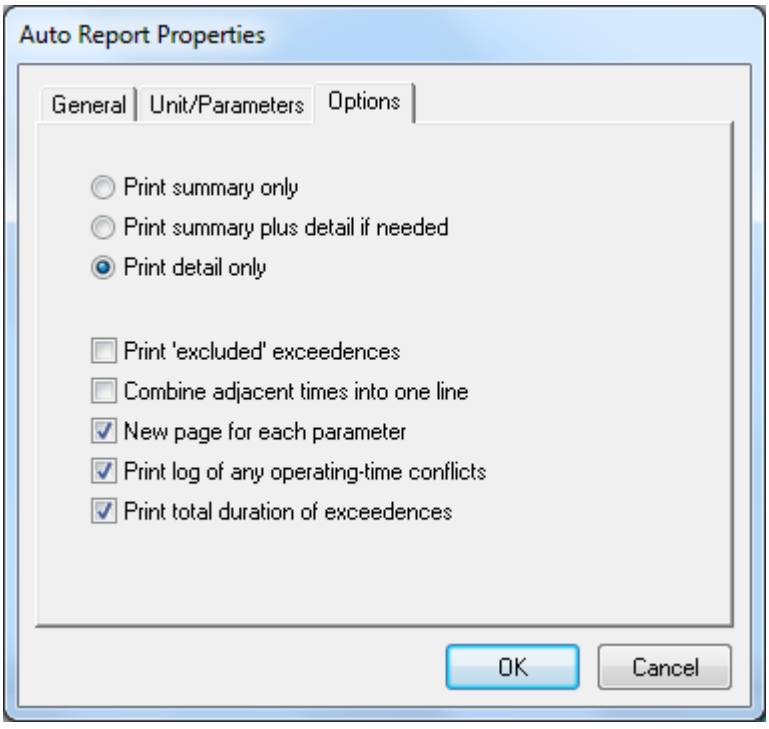
Unit/Parameters Tab

Select the unit and parameters to include in the auto report.



Options Tab

Select additional options. See the excess emissions report section for descriptions of these options.

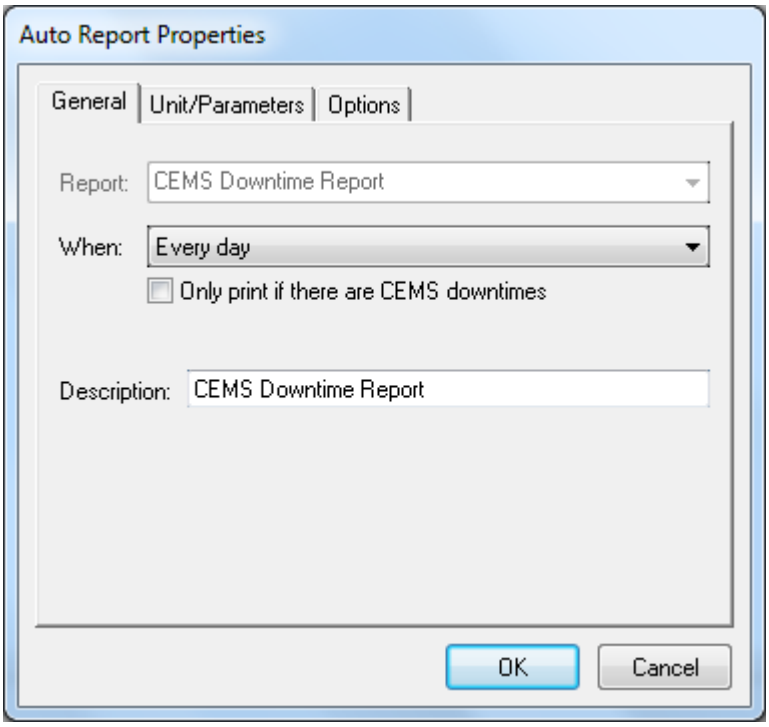


Auto Report Properties - CEMS Downtimes

These properties apply to CEMS downtimes auto reports.

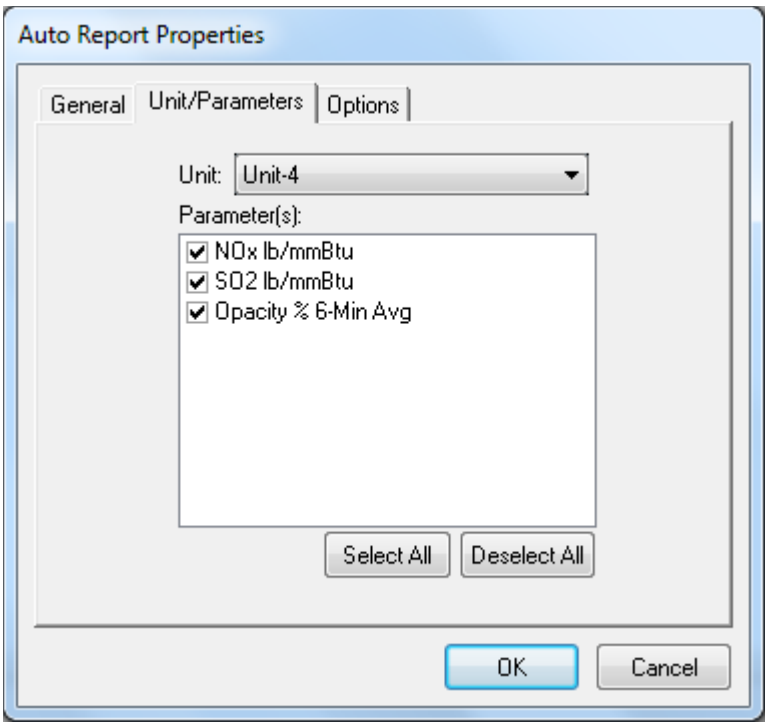
General Tab

Select when the report should be printed.



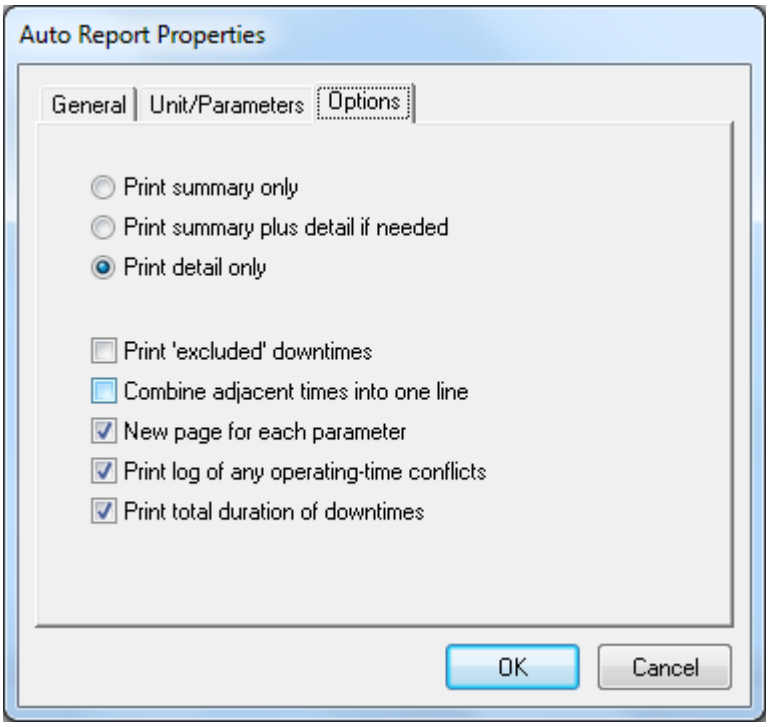
Unit/Parameters Tab

Select the unit and parameters to include in the auto report.



Options Tab

Select additional options. See the CEMS downtime report section for descriptions of these options.

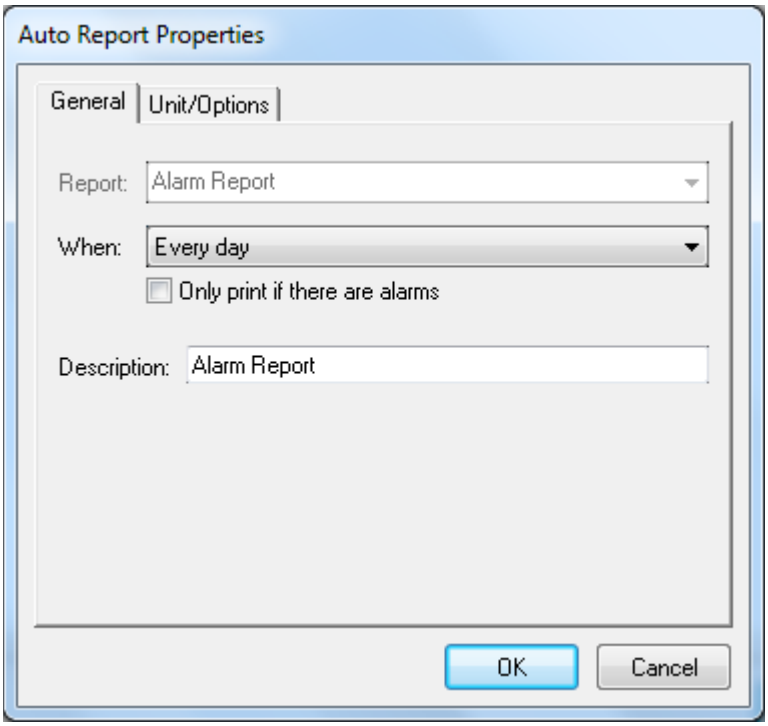


Auto Report Properties - Alarms

These properties apply to alarm auto reports.

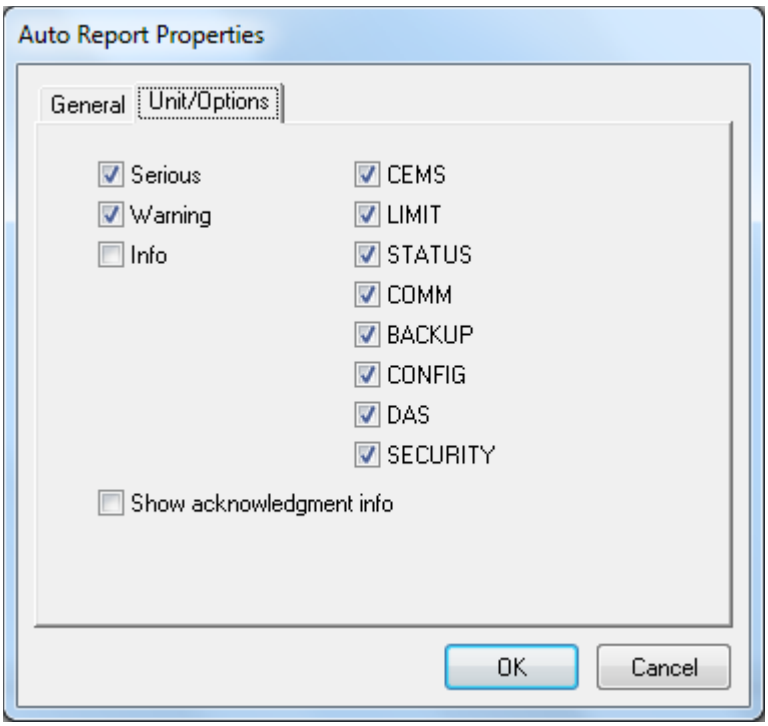
General Tab

Select when the report should be printed.



Options Tab

Select additional options. See the alarm report section for descriptions of these options.


Auto Report Properties
General
Unit/Options
Serious
Warning
Info
CEMS
LIMIT
STATUS
COMM
BACKUP
CONFIG
DAS
SECURITY
Show acknowledgment info
OK
Cancel

Report Wizard

The Report Wizard allows you to perform the following:

Create a new report

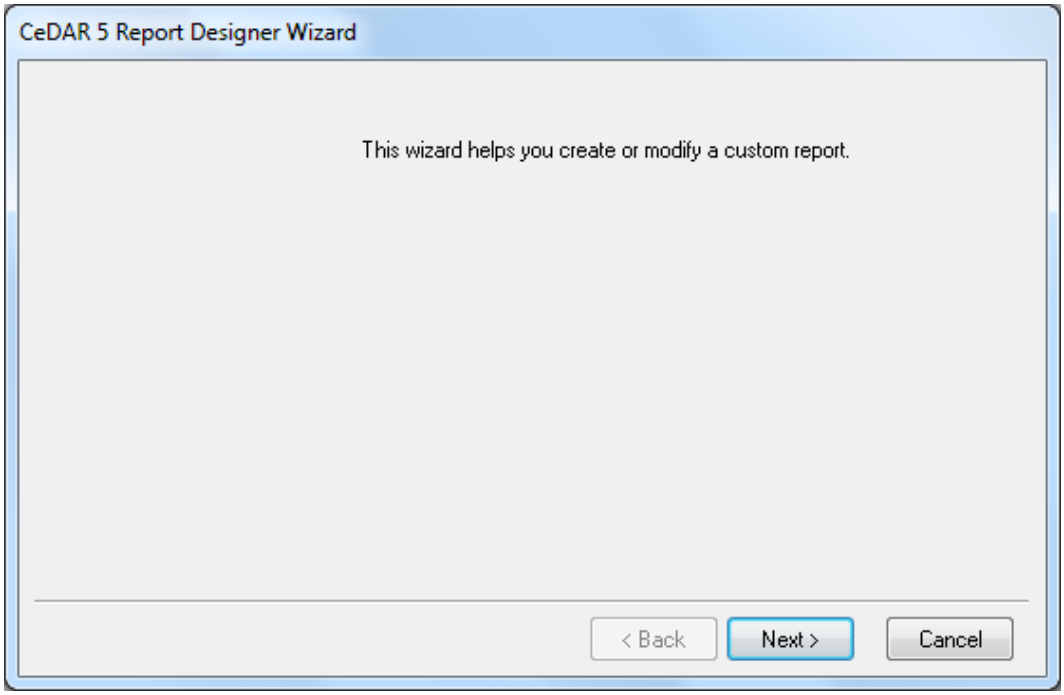
Modify an existing report

Duplicate an existing report for another unit

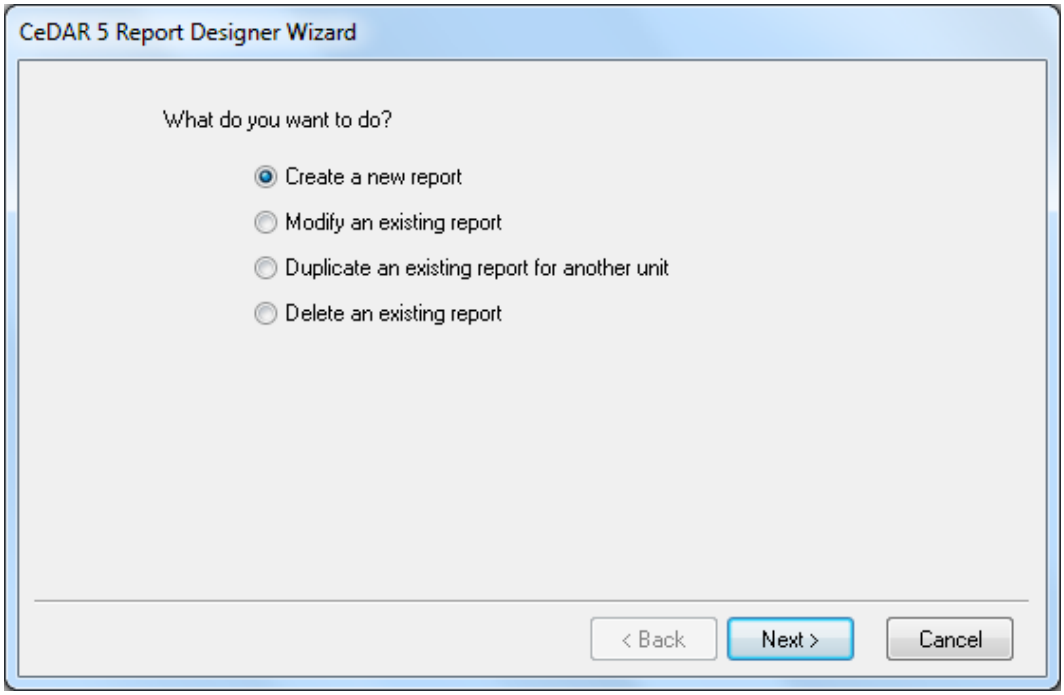
Delete an existing report

Report Wizard: Create Custom Report

To open the Report Wizard, click Tools > Report Wizard in the Report Generator menu.

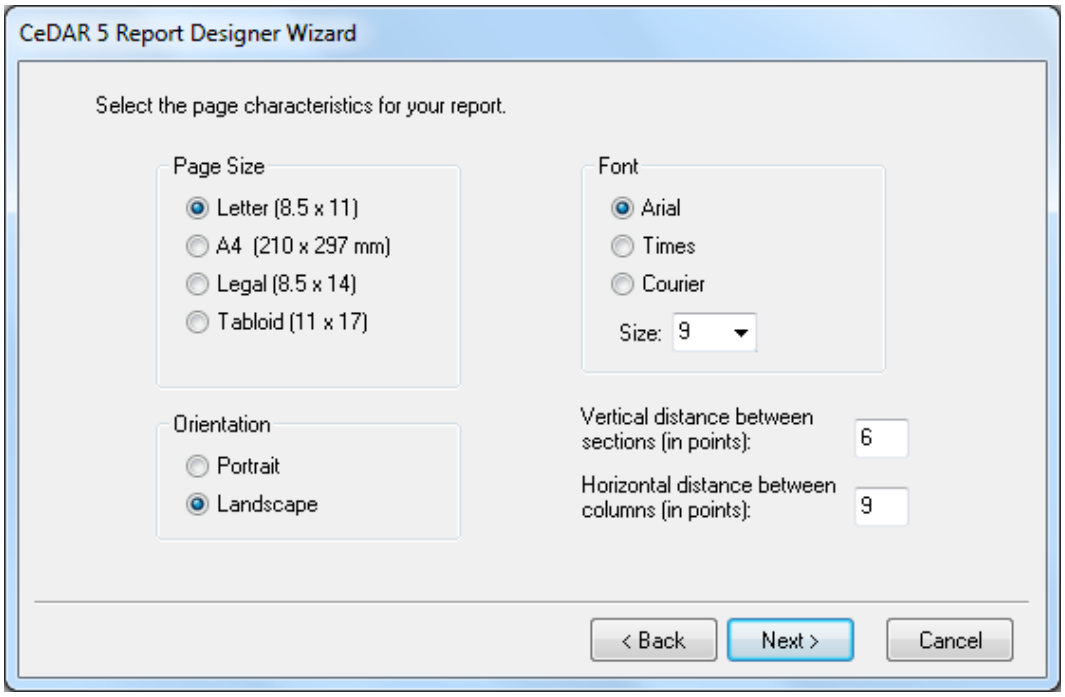


Click Next.



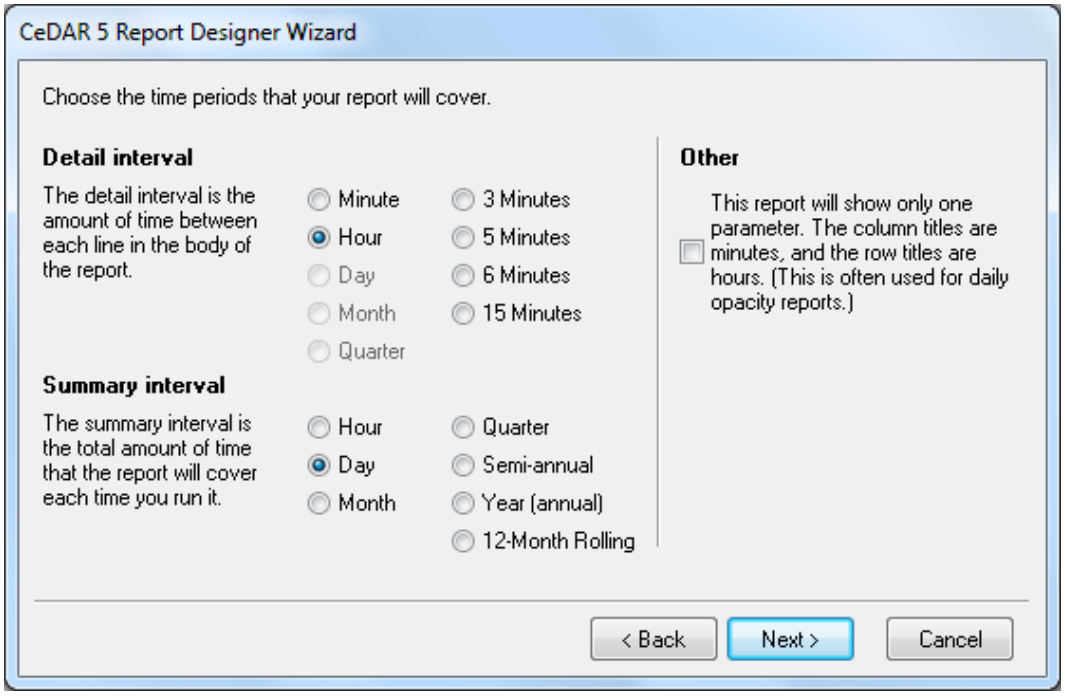
Select "Create a new report".

Click Next.



Choose the page layout for your report. Select the page size, orientation, font type, and font size. The font size is in points. The distance between lines and columns can also be changed.

Click Next.

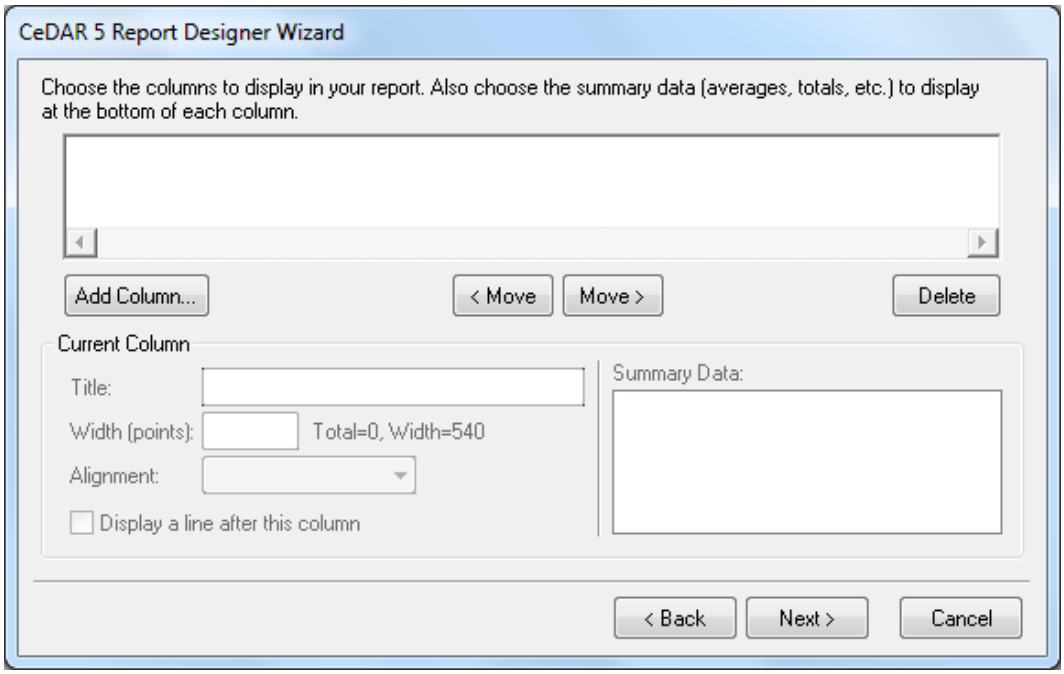


Select time periods for your report. The Summary interval determines the total amount of time the report will cover. The Detail interval is the amount of time between each row of detail data in the report.

The "Other" option is useful for specialized reports, such as daily 6-minute opacity reports. This creates a report that can compactly display minute-level data for a single parameter for one day. See the end of this section for the "Other" option.

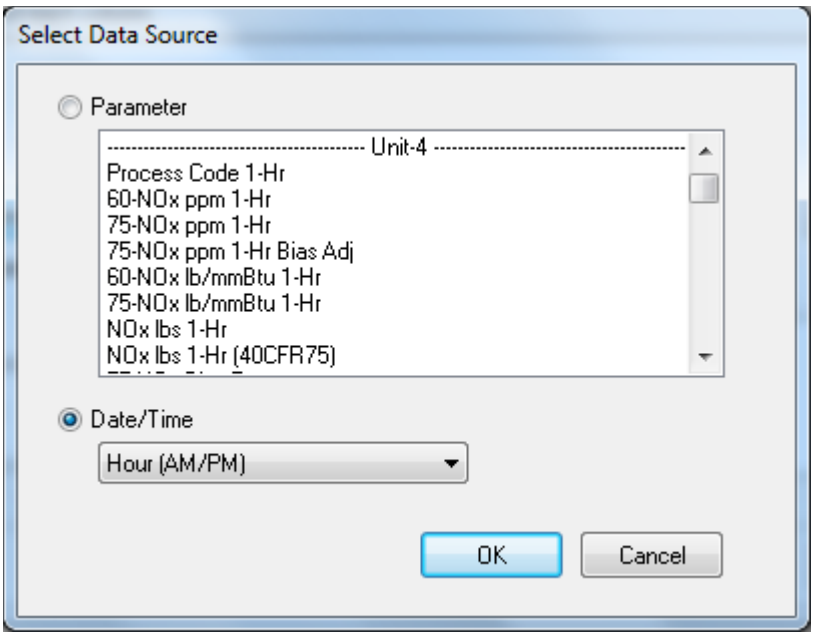
This wizard screen appears only when the report is first created. Once the report is created, this screen is not available again.

Click Next.



This wizard page lets you configure the columns for the report.

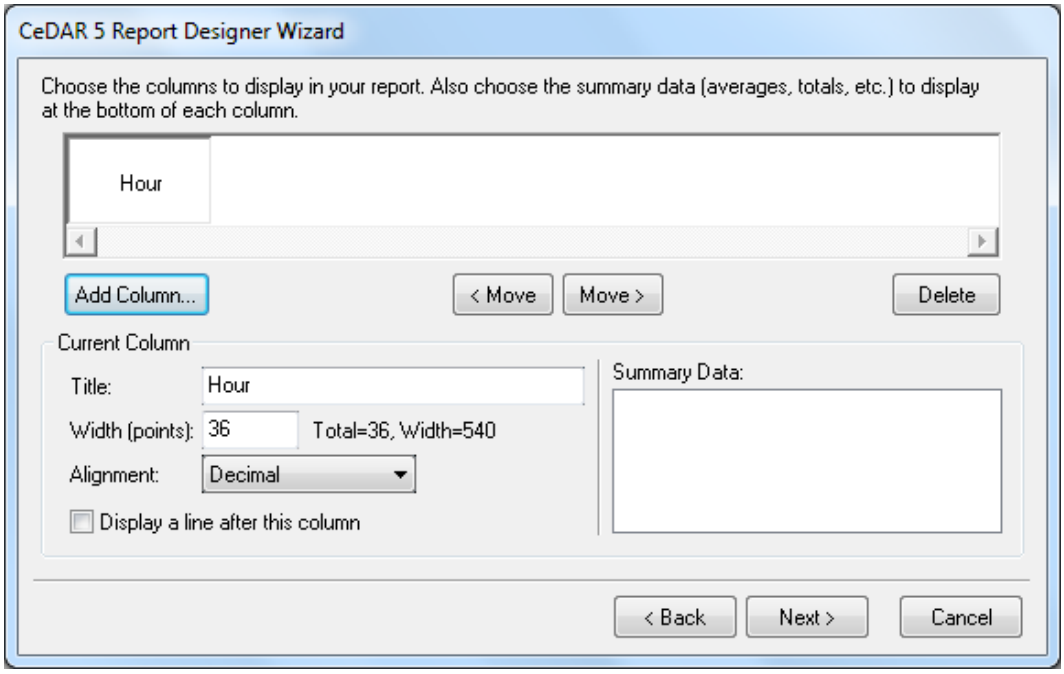
Click Add Column.



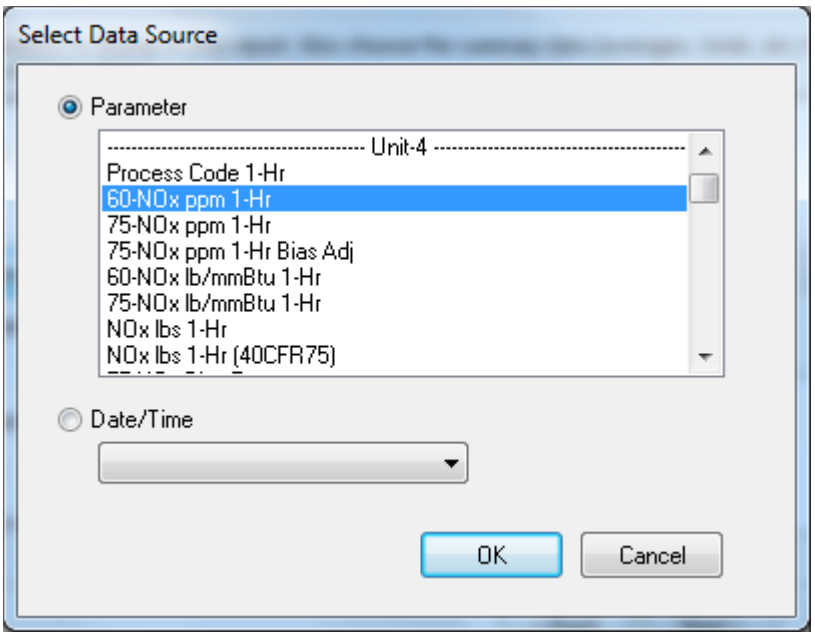
The first column of the report is normally a date and/or time. Select a date/time option from the pull-down menu.

Click OK.

The date/time column is added to your report.

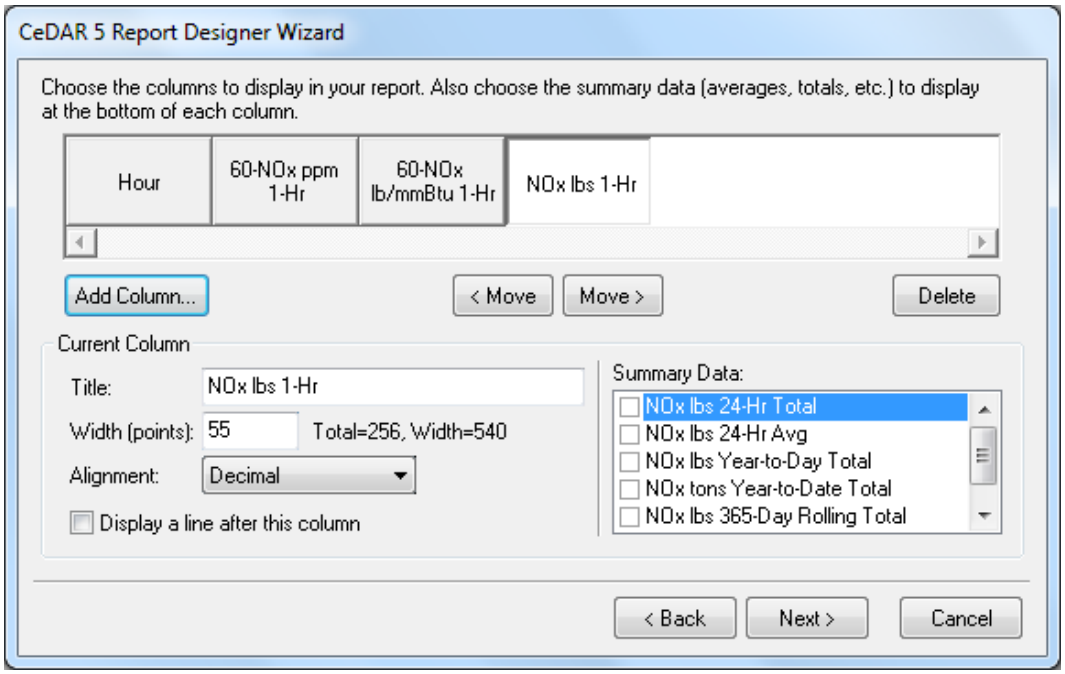


To add columns of data to the report, click Add Column again.



The detail interval that was selected for the report determines which parameters are available for this list. The unit name and a dashed line separates the parameters for each unit. Select a parameter to add to the report by clicking on the parameter. To select multiple parameters use the Shift or Ctrl keys.

Click OK.



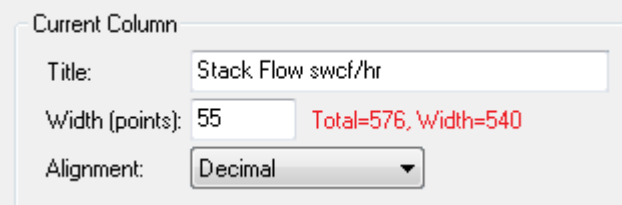
The parameters you chose have been added to the list of columns in the upper half of the window.

Use the Move buttons to move the highlighted column left or right. Use the Delete button to remove the highlighted column from your report.

The lower half of the window allows you to configure the currently selected column. You can change the column title, width, and alignment of the data.

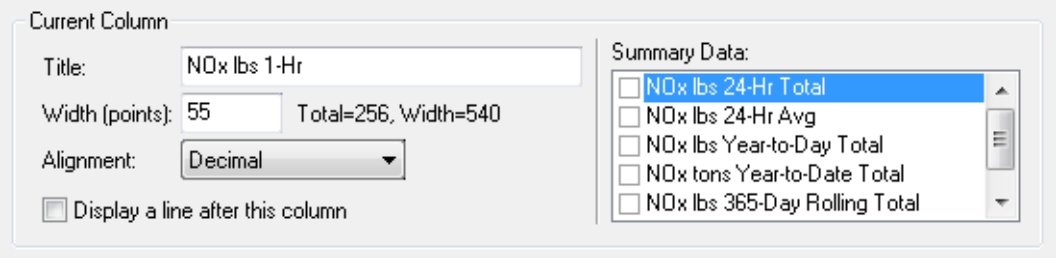
If the column title is too long for the column width, the title will automatically wrap. To control where the title breaks to another line, insert a "pipe" character (|) where you want the title to wrap. The "pipe" character is on the backslash key on the keyboard.

The window displays the total width of all columns, and the maximum total width. The current total updates as you change column widths and add columns. If the total width of all columns exceeds the maximum, the text turns red, as in this example.



Select "Display a line after this column" to put a vertical line to the right of the column. This can help to visually group related columns together. You cannot display a line after the last column in the report.

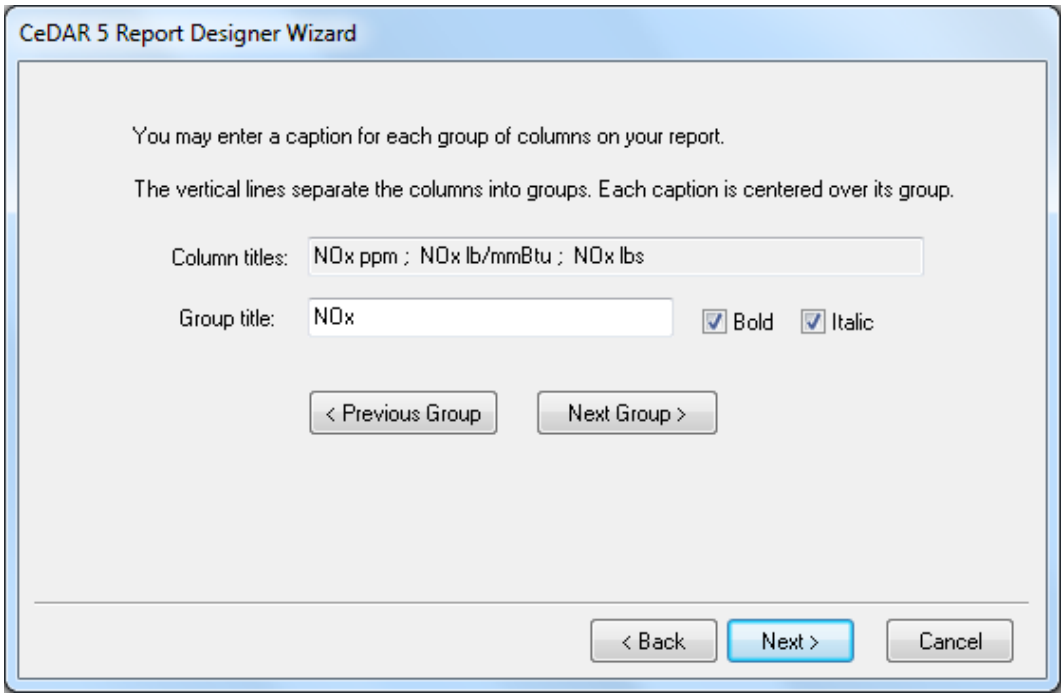
If the highlighted column has summary information available, it appears in the Summary Data list.



Check the box next to the summary data that should be displayed on the report. Summary values will appear on the bottom of the report.

You may not select any summary data for the first (leftmost) column. This column is reserved for descriptions of the summary data.

Click Next.

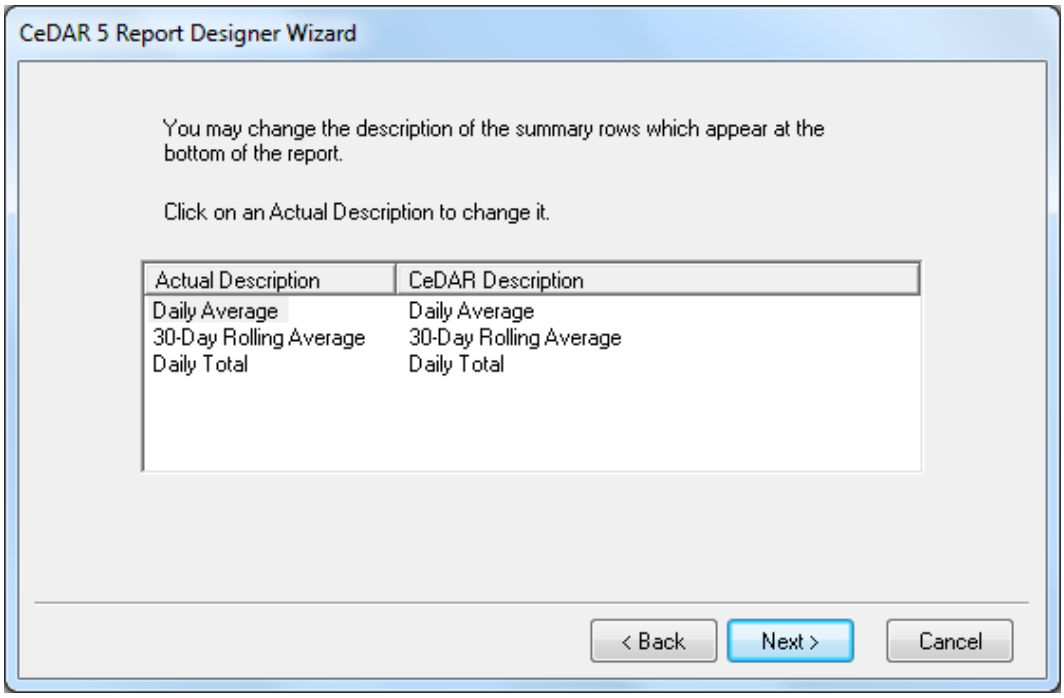


If you have separated columns into groups by checking the "Display a line after this column" boxes (on the previous screen), you have the option to add a title to each group of columns. If you have not grouped the columns, the fields on this screen will be disabled.

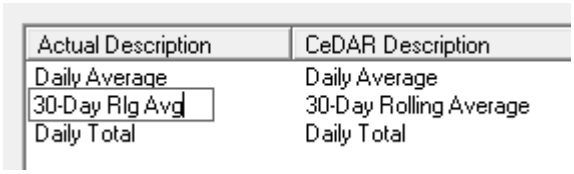
The column names for the group appear in the first field. You may optionally enter a title for the group in the second field. The group title appears on the report centered above the columns that are in the group.

Use the Previous Group and Next Group buttons to select groups.

Click Next.

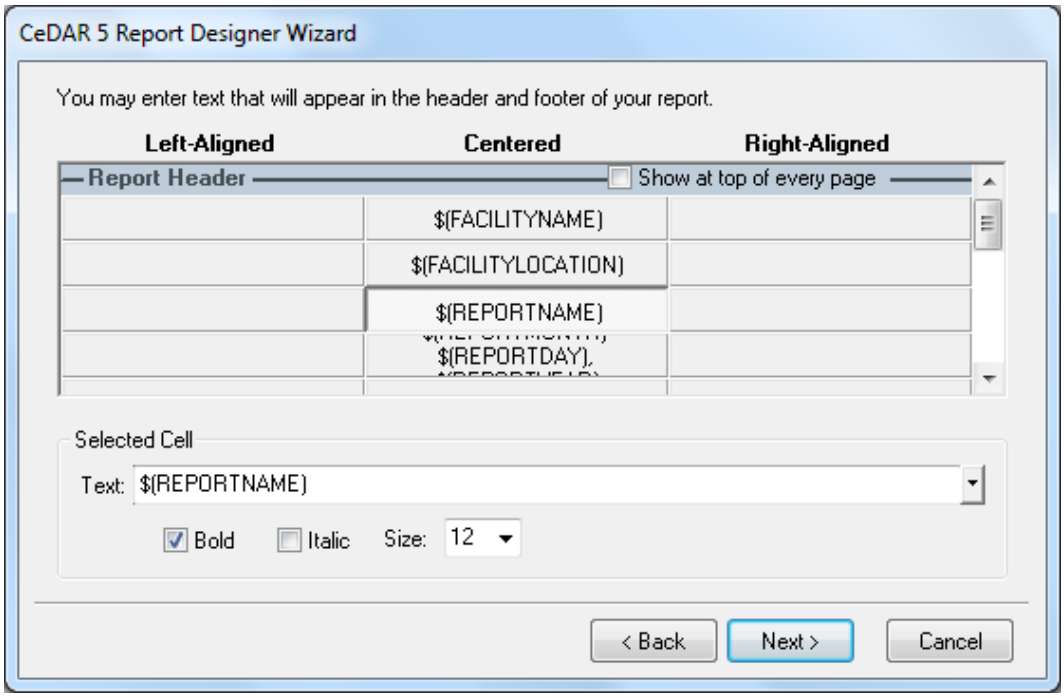


If you have selected summary data for one or more columns on the report, this screen displays descriptions of the summary rows. To change the summary row description, click on the text in the Actual Description column.



If a summary row title is too wide for the column, it will be truncated on the report.

Click Next.



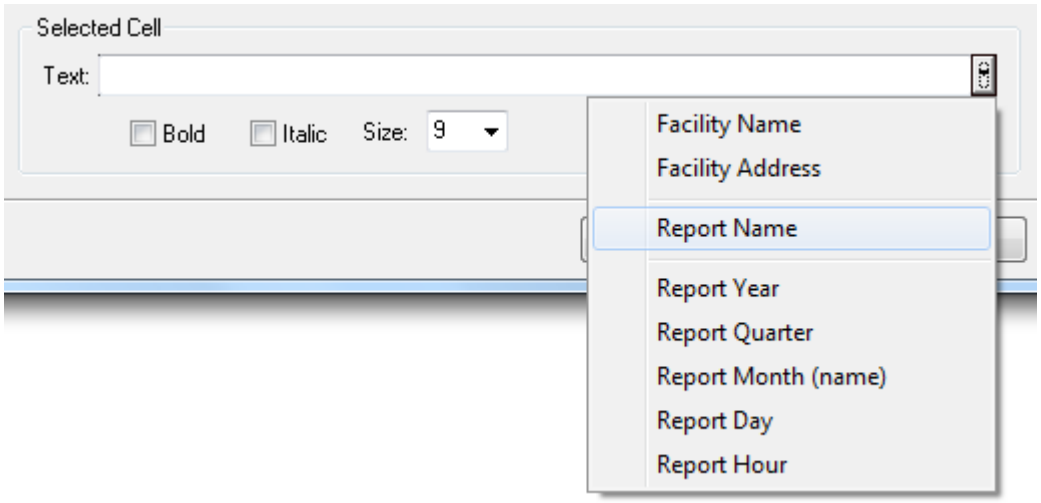
You may customize header and footer information for your report. Scroll down to view the footer.

The Report Wizard provides a default header, including the facility name, facility location, report name, and report date.

The report header appears at the top of the report. If "Show at top of every page" is checked, the header appears on each page.

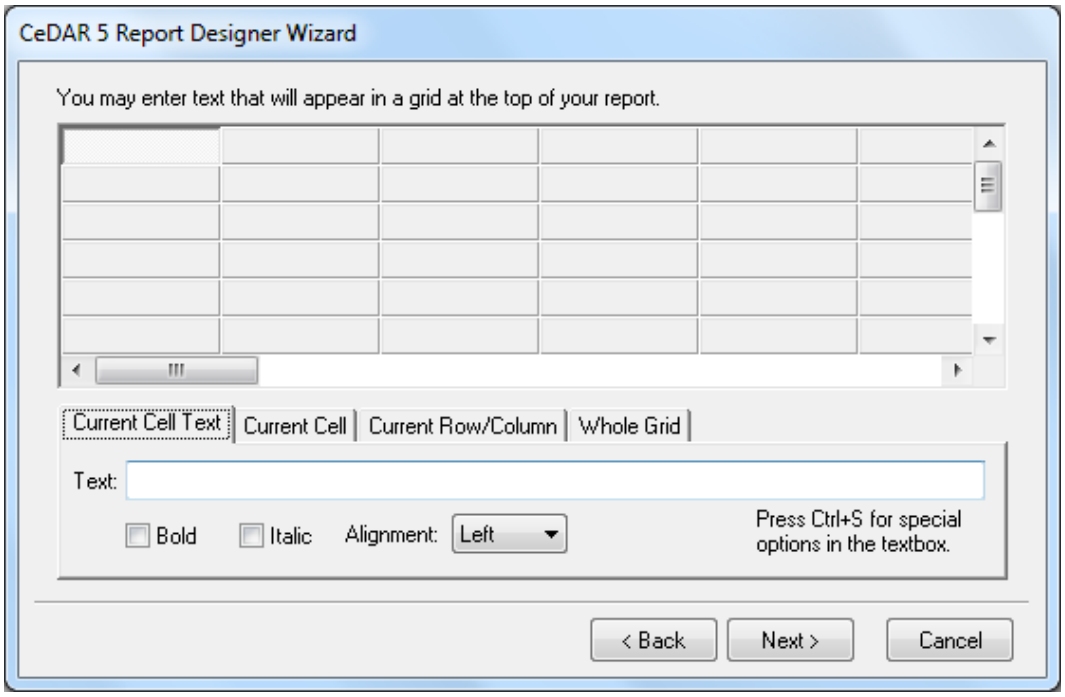
To change the header or footer, click on a cell. The lower half of the window shows the configuration for the selected cell.

Enter the text you want to see on the report. You can also click the pull down menu to access built-in variables.



There is no default report footer. To edit the footer, scroll down to the Report Footer section. The footer cells can be edited just like the header cells.

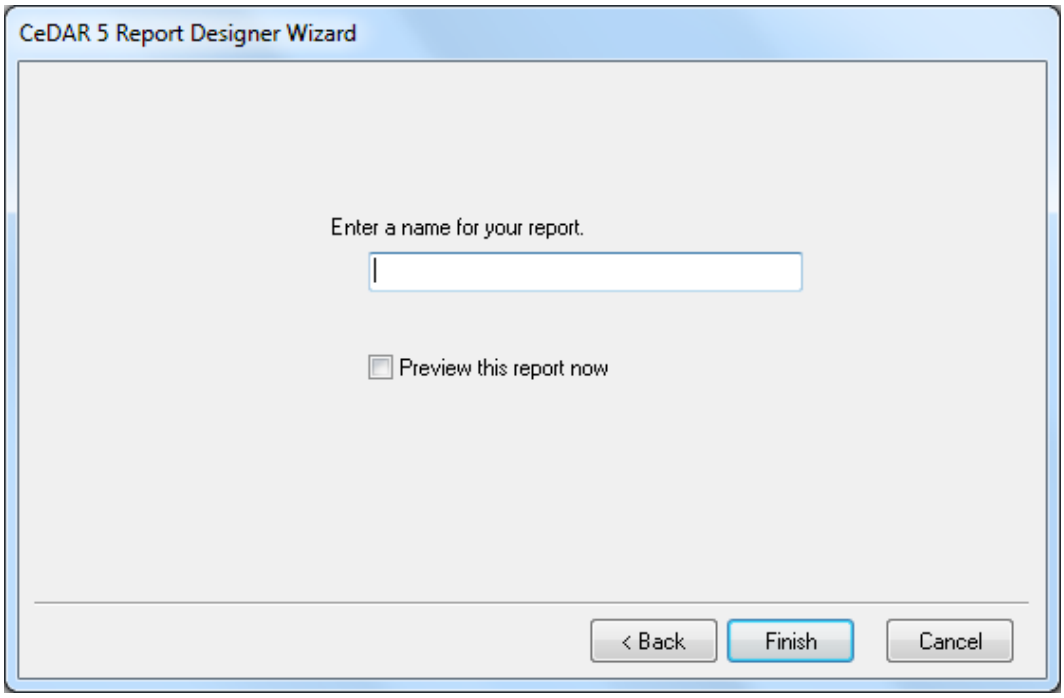
Click Next.



This screen allows you to put additional information in a grid at the top of the report. The grid is often used to display emission limits. The grid appears below the header and above the data columns.

By default, no grid information is configured. A grid can take some time to configure but may be very useful for your report.

Click Next.



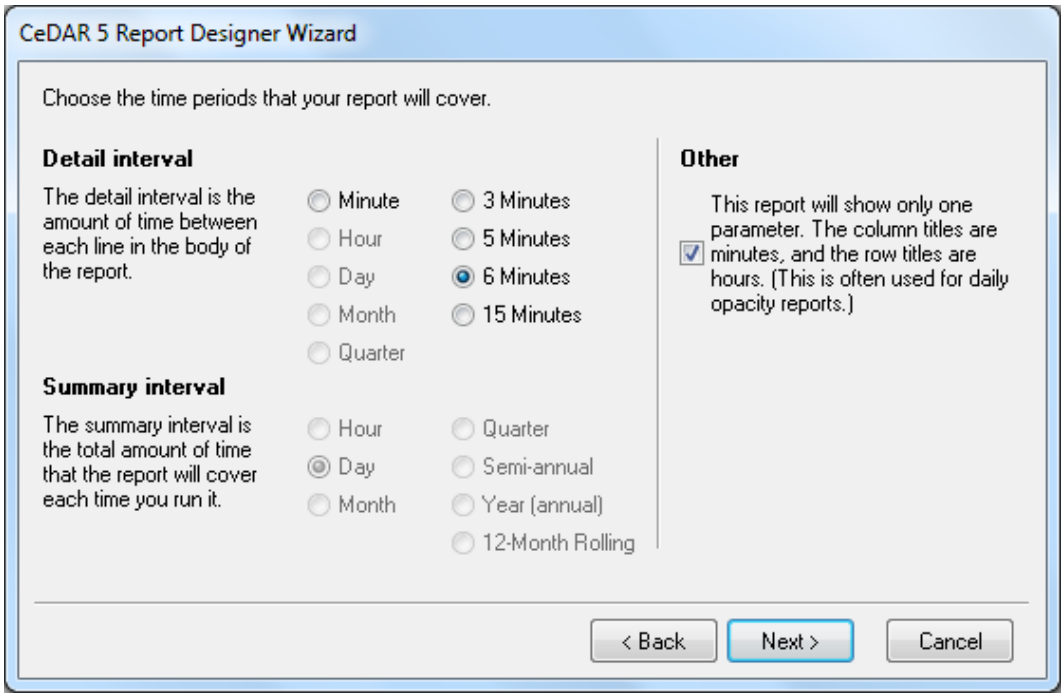
Enter a name for your new report. Check "Preview this report now" to see the report you just created.

Click Finish.

The report will simply be added to the appropriate category in the main Report Generator window. If you checked the "Preview this report now" box, the report will be generated.

Report with "Other" Time Interval

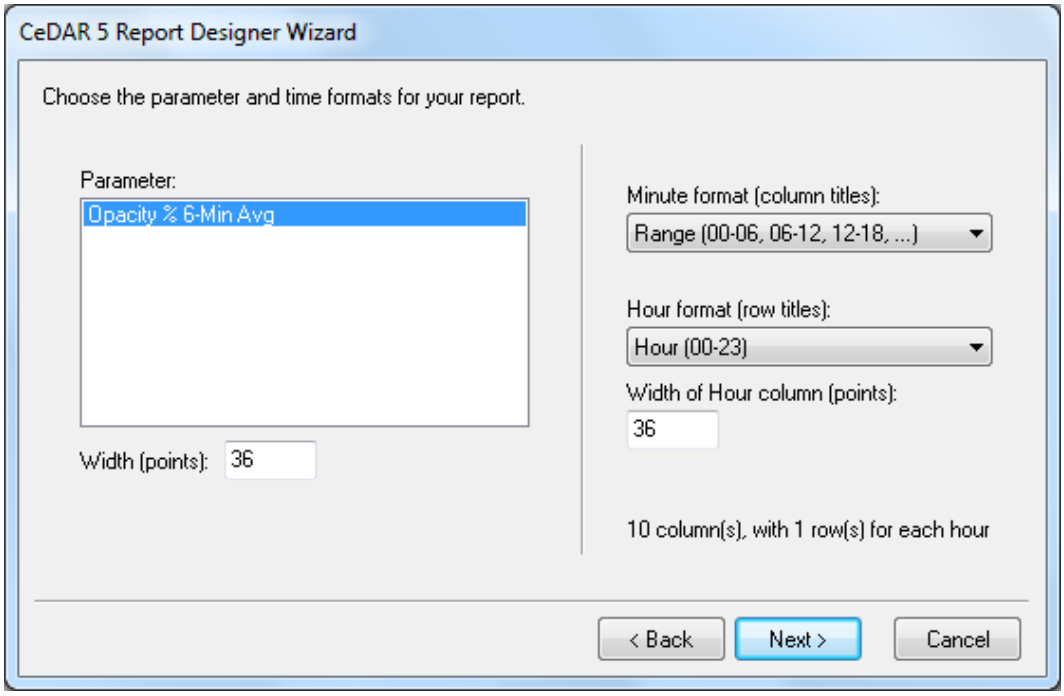
The "Other" option is useful for specialized reports, such as daily 6-minute opacity reports.



When the "Other" box is checked, the summary interval is always "Day" and the Detail interval must be one of the minute options. Select the minutes between detail data. "6 Minutes" is typical for opacity.

Click Next.

The wizard does not show the pages for configuring columns, column groups, and summary row descriptions. Instead, the wizard shows the following page.



Select the parameter to display on the report. This report can only display data for a single parameter.

Select the minute format for the column titles.

Select the hour format for the row titles.

If the column widths would be wider than the maximum report width, the wizard will create the report with multiple rows of data per hour.

Click Next to configure the header and footer.

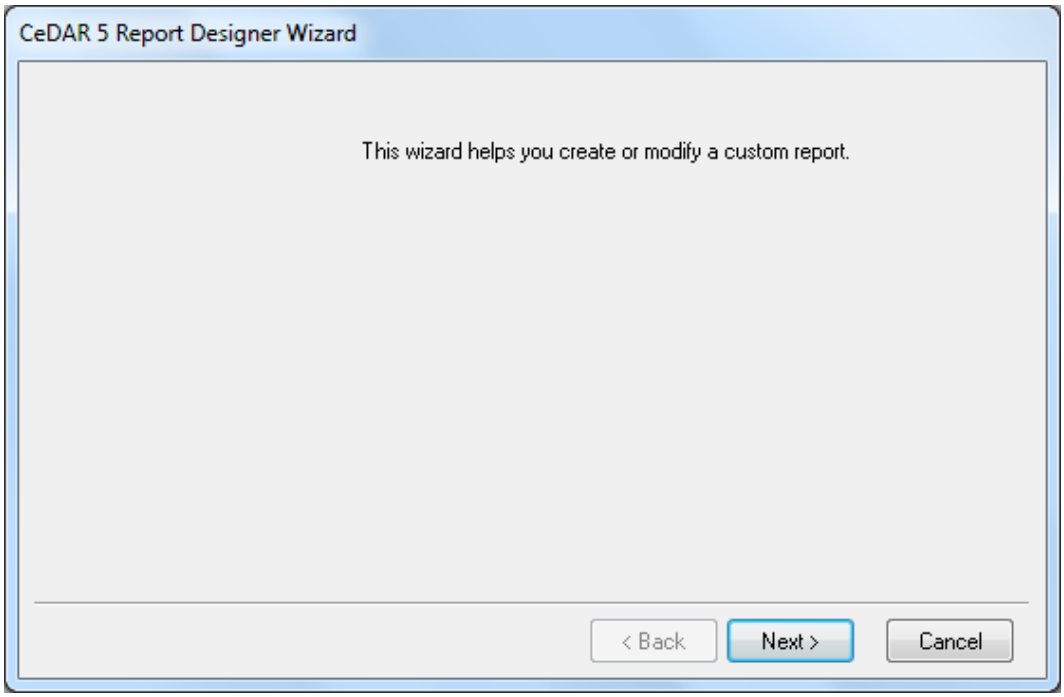
Here is an example of this report.

Demo Facility
Facility Location
Unit-4 Daily Opacity Report
October 1, 2013

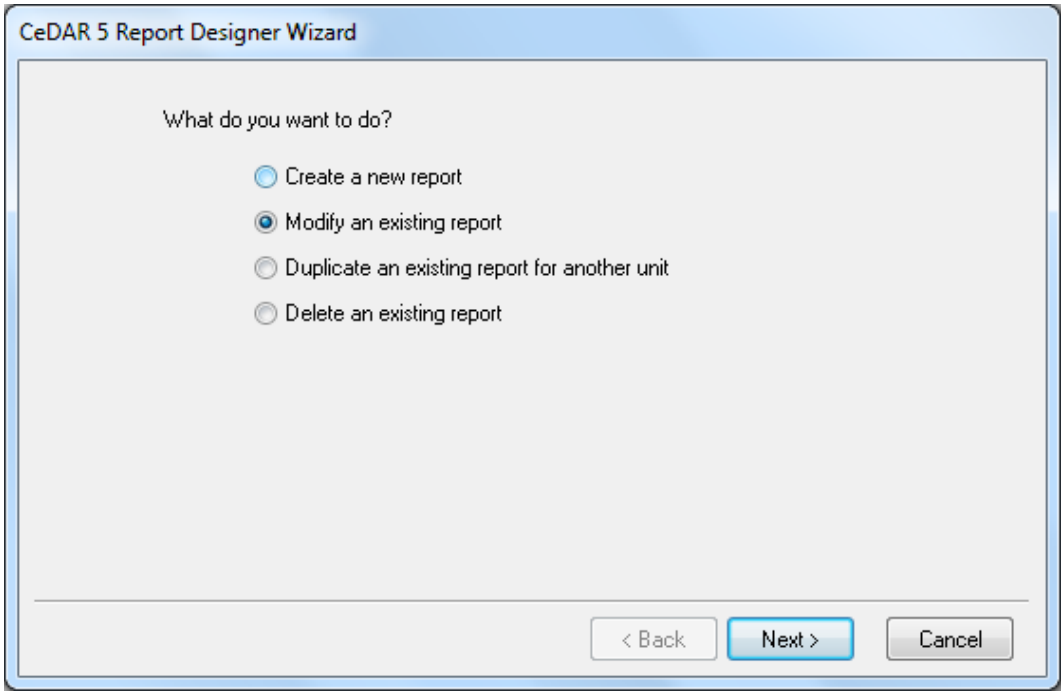
Hour	00-06	06-12	12-18	18-24	24-30	30-36	36-42	42-48	48-54	54-60
00	4.0	4.5	4.4	4.7	4.6	4.5	4.8	4.8	4.8	4.8
01	4.3	4.9	5.1	5.2	4.5	4.4	4.4	4.7	4.6	4.6
02	4.8	4.9	4.8	5.0	5.0	4.7	3.9	4.0	4.4	4.2
03	4.2	4.0	4.4	4.6	4.6	4.6	4.7	4.9	4.9	4.9
04	5.2	4.8	4.8	4.4	5.1	4.5	4.4	4.3	4.7	4.5
05	4.7	4.8	5.0	5.1	5.2	5.3	5.2	4.2	4.4	4.6
06	4.7	4.7	4.6	4.7	4.9	5.0	4.8	Cal	Cal	5.3
07	5.4	5.7	5.1	4.7	4.8	5.1	4.9	4.9	4.7	5.3
08	5.1	5.3	5.2	5.2	5.5	5.5	5.6	6.4	5.3	5.6

Report Wizard: Modify Report

To open the Report Wizard, click Tools > Report Wizard in the Report Generator menu.

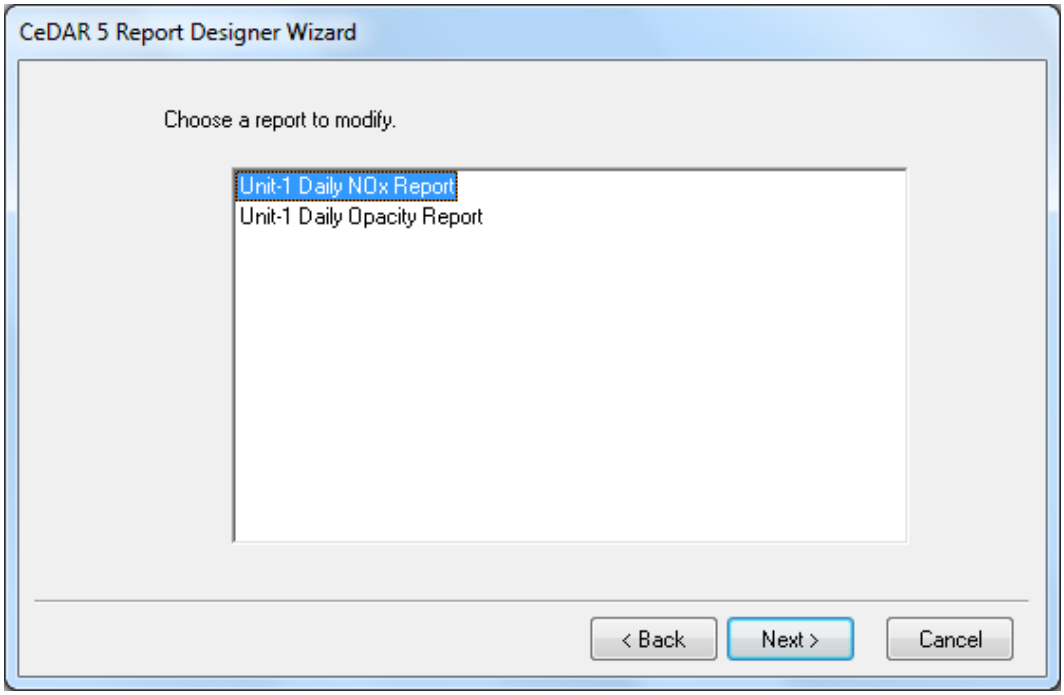


Click Next.



Select "Modify an existing report".

Click Next.



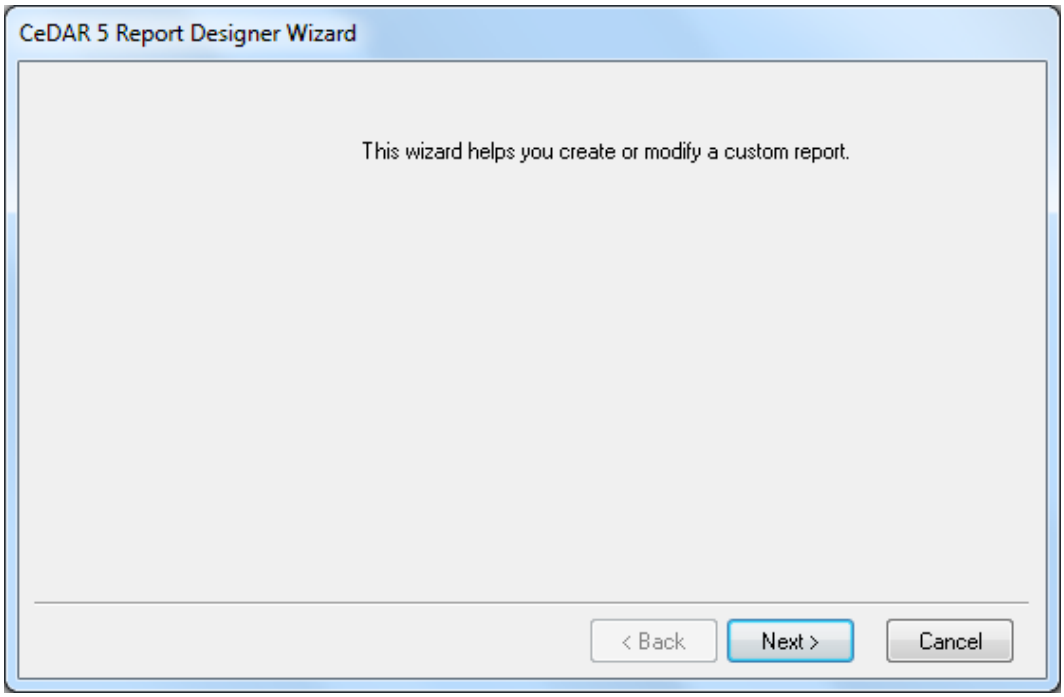
Select the report to modify. You can only modify custom reports that you have created. If a report provided by CiSCO needs to be changed, contact CiSCO software support.

Click Next.

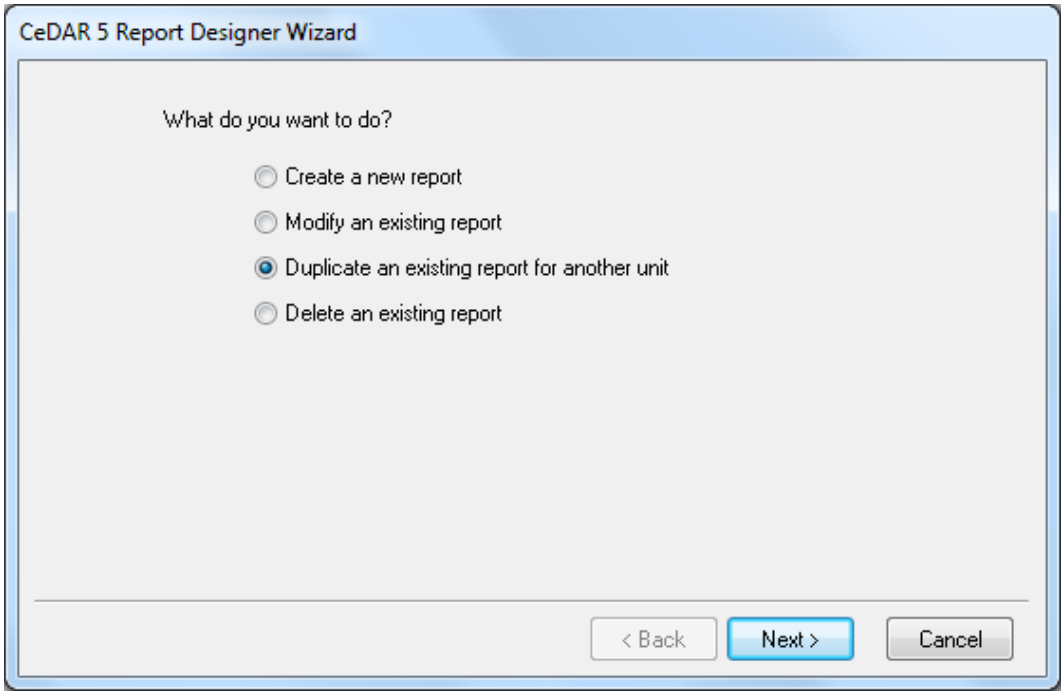
The rest of the wizard screens are the same screens that are used to create a report.

Report Wizard: Duplicate Report

To open the Report Wizard, click Tools > Report Wizard in the Report Generator menu.

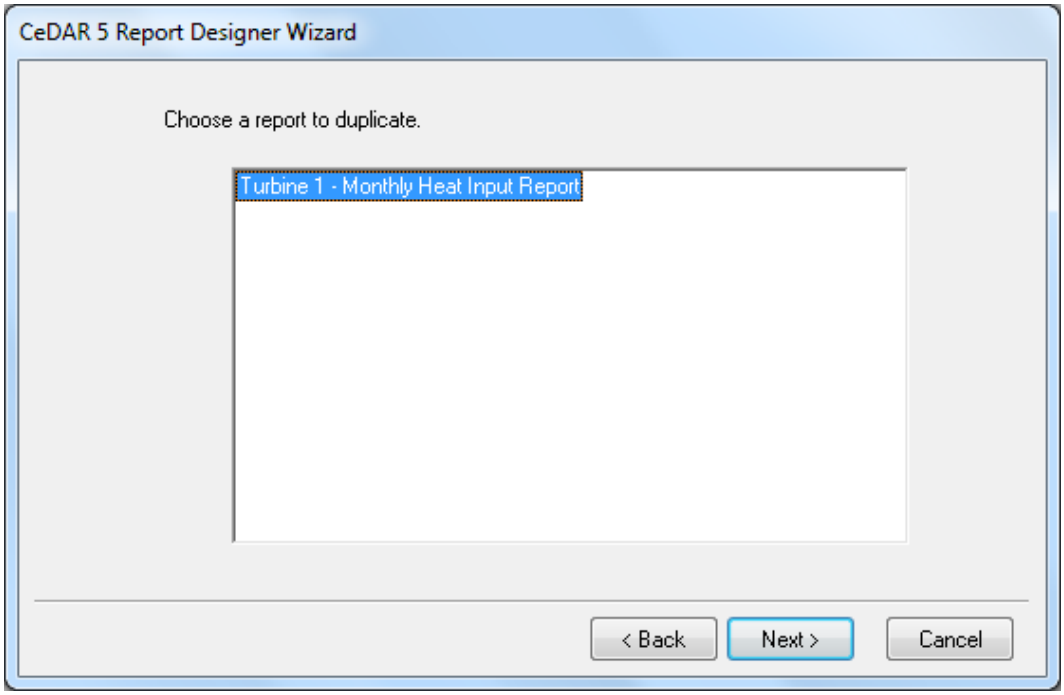


Click Next.



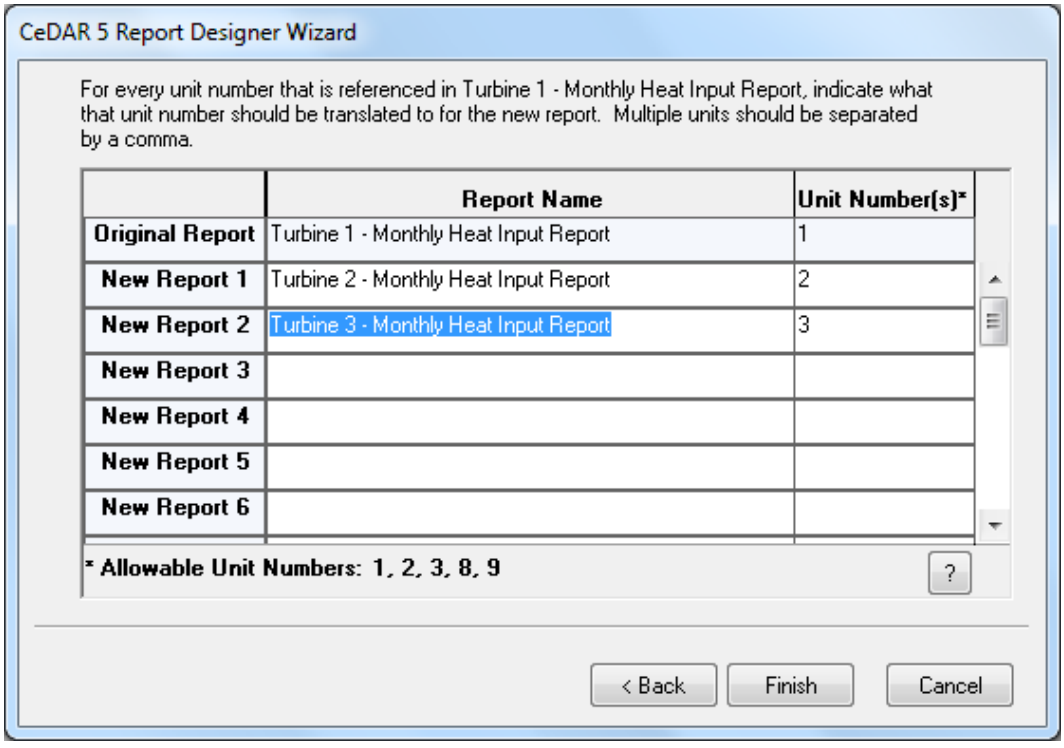
Select "Duplicate an existing report for another unit".

Click Next.



Select the report to duplicate.

Click Next.



The original report can be duplicated multiple times by this one screen. In this example, the original report is for Turbine 1, and will be duplicated for Turbine 2 and Turbine 3.

The Allowable Unit Numbers are from the internal Cedar configuration, and may not match the actual unit name or number. Contact CiSCO software support if you need clarification for the unit numbers.

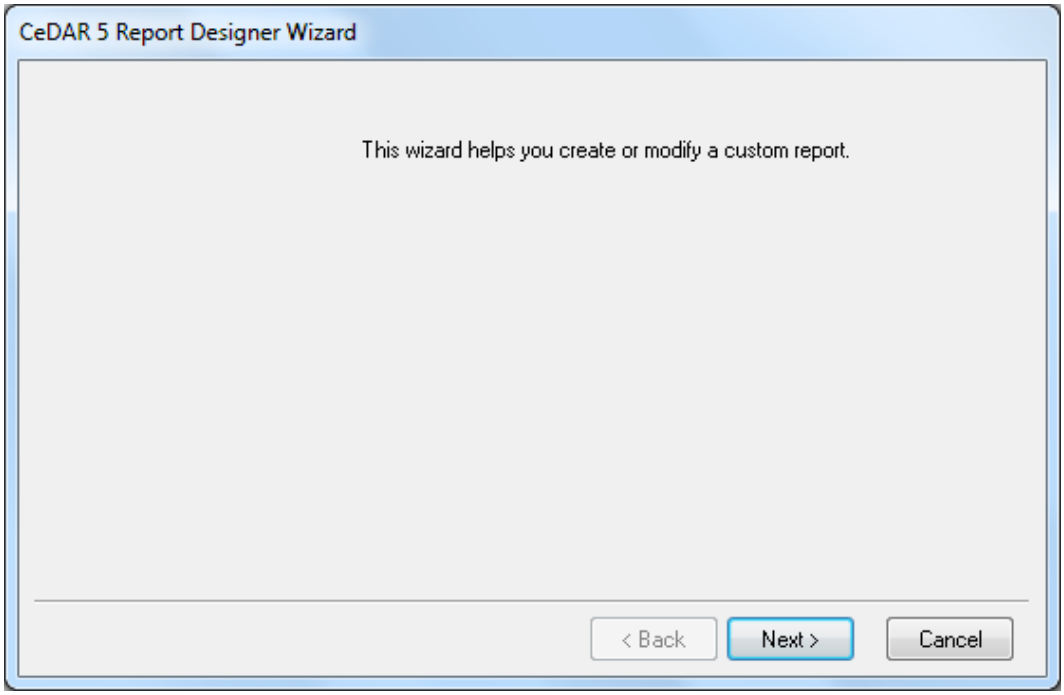
Note

If you do not change the unit numbers or report name, the wizard will make an exact duplicate of the existing report.

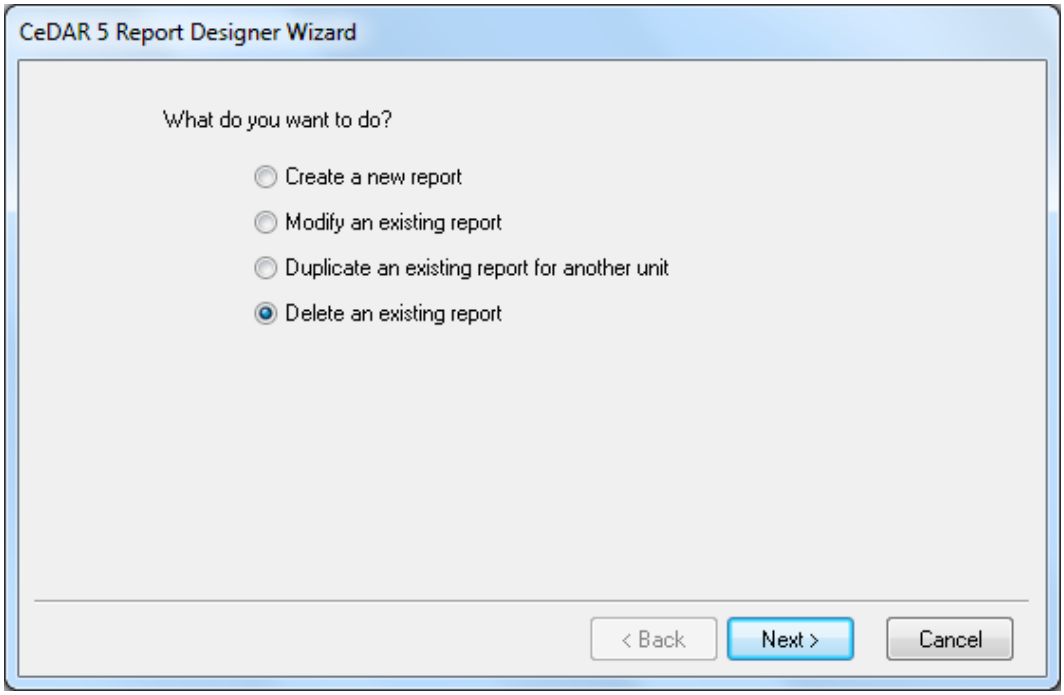
Click Finish.

Report Wizard: Delete Report

To open the Report Wizard, click Tools > Report Wizard in the Report Generator menu.

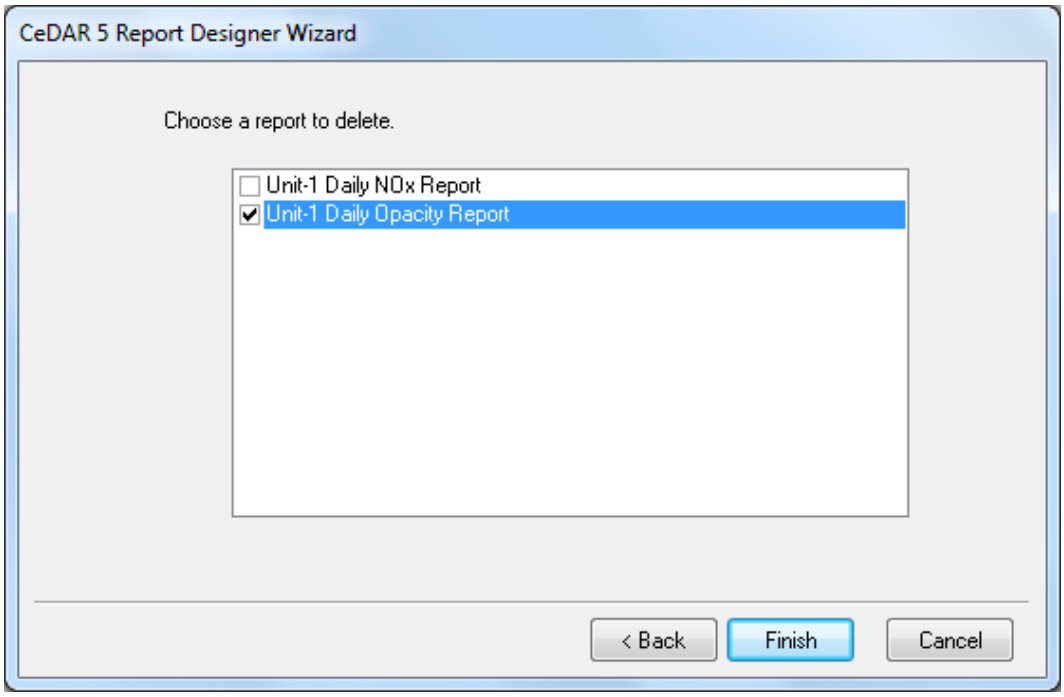


Click Next.



Select "Delete an existing report".

Click Next.



Select the reports you want to delete.

Click Finish.

A message box will ask you to confirm that you want to delete the reports. Click Yes.

Report Generator Options

To open the Options window, click the Tools > Options menu.

The Options window has several tabs:

General

Facility Info

Data Validity

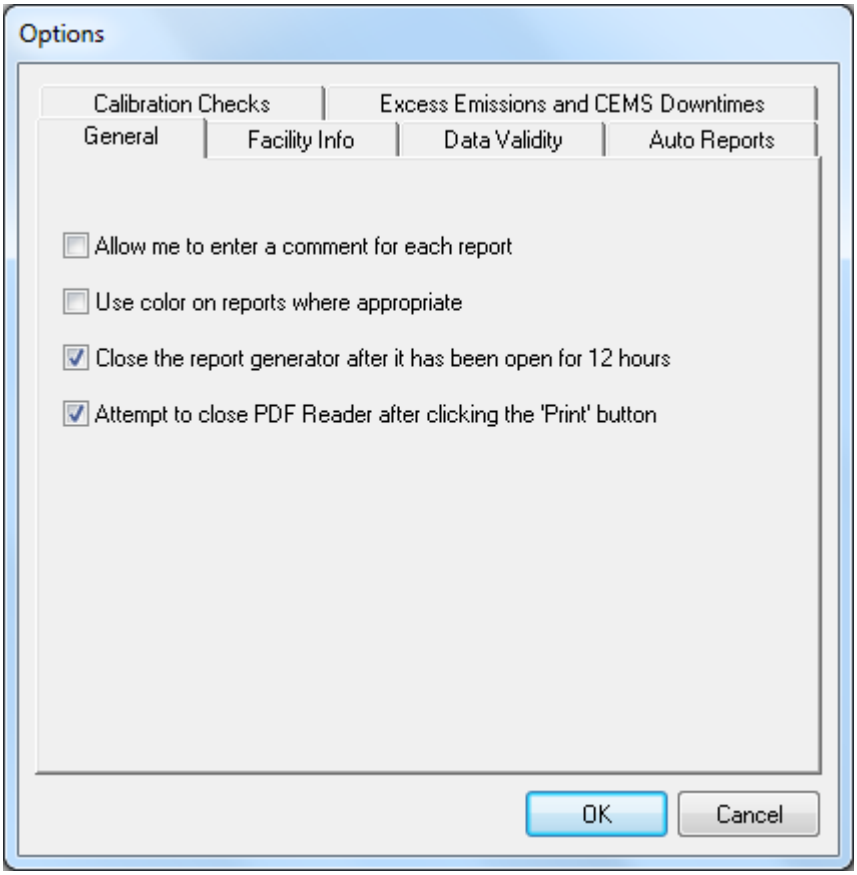
Auto Reports

Calibration Checks

Excess Emissions and CEMS Downtimes

General

These options apply throughout the Report Generator.



Allow me to enter a comment for each report

Check this box to enable comments on reports.

Use color on reports where appropriate

Some reports support color when this box is checked.

Close the report generator after it has been open for 12 hours

When this box is checked, the Report Generator will close itself after 12 hours. If users launch multiple Report Generator instances but do not close the instances, this option can help clean up the stale instances.

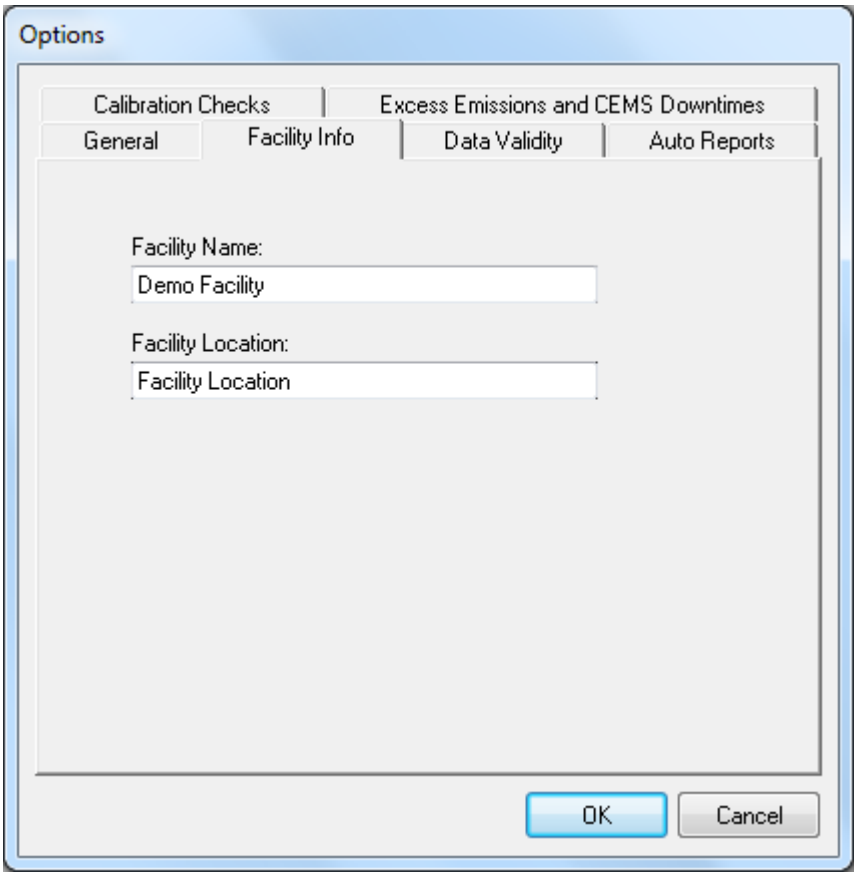
Attempt to close PDF Reader after clicking the 'Print' button

When this box is checked, the Report Generator tries to close any Adobe Reader or Foxit Reader windows after a PDF report has been printed by clicking the Print button. Some versions of PDF reader applications do not automatically terminate themselves after a report has been printed.

Facility Info

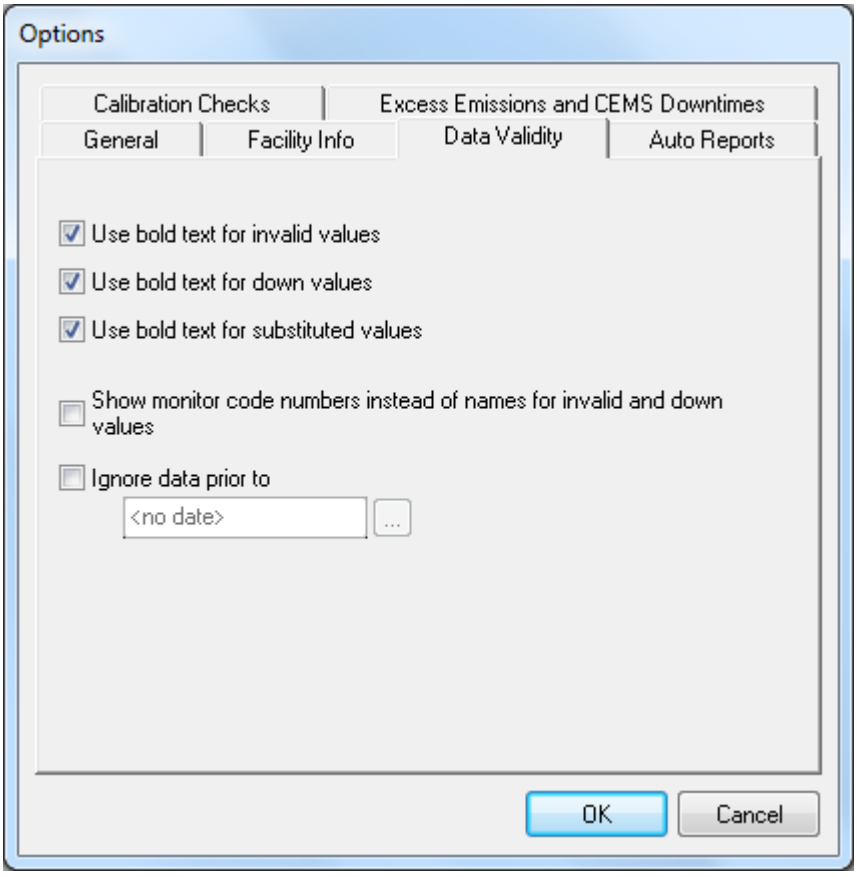
These options apply throughout the Report Generator.

Enter the name and location of the facility. This information appears on many reports.



Data Validity

These options apply to reports that display typical data points, such as hourly, daily, and monthly reports.



Use bold text for invalid values

When this option is selected, data points with invalid monitor codes appear in bold text.

Use bold text for down values

When this option is selected, data points with offline monitor codes appear in bold text. This includes periods when the unit was offline, and may include other offline conditions, such as an inactive bypass stack.

Use bold text for substituted values

When this option is selected, data points with monitor codes that indicate substitute data appear in bold text.

Show monitor code numbers instead of names for invalid and down values

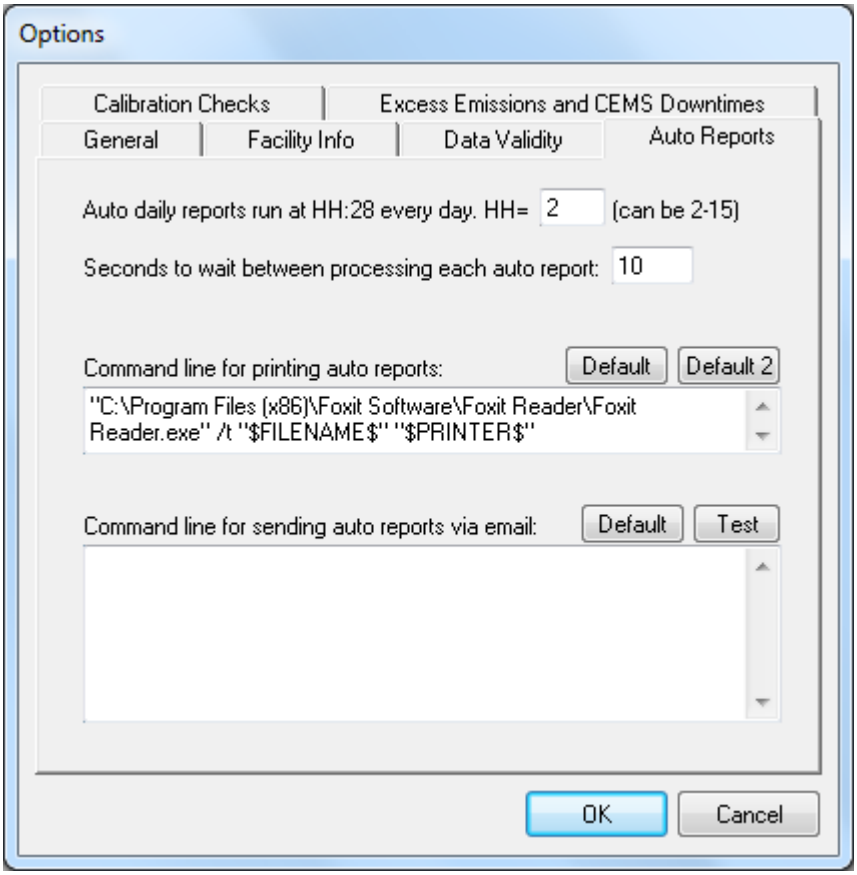
When this option is selected, the monitor code numbers are displayed instead of the short description of the monitor codes.

Ignore data prior to

If this option is selected, all data prior to the entered date is considered offline. This is useful, for example, to disregard data points (such as 1-minute and 1-hour data) prior to CEMS certification, without having to edit the monitor codes for that data.

Auto Reports

These options apply to automatic reports.



Automatic daily report hour

Automatic daily reports run every day at 28 minutes after the hour. The hour (HH) can be between 2 and 15.

Seconds to wait between processing each auto report

When automatic reports are being generated, Cedar waits this amount of time between each report. The default is 10 seconds. A longer delay may be necessary for some printers.

Command line for printing auto reports

Cedar uses this command line to print automatic reports.

One default is for Foxit Reader, and the other default is for Adobe Reader. Select the appropriate default for the reader that will be used to print automatic reports.

Note

Adobe Reader does not function properly under the built-in special accounts, such as Network Service, Local Service, and Local System.

Foxit Reader is required on the DAS if auto reports will be printed from one of the built-in accounts. Foxit Reader is available from www.foxitsoftware.com.

Adobe Reader may be used if automatic reports will run under an account that has a typical profile (not a built-in account).

Both Adobe Reader and Foxit Reader may be installed, if desired.

Command line for sending auto reports via email

Cedar uses this command line to send automatic reports via email.

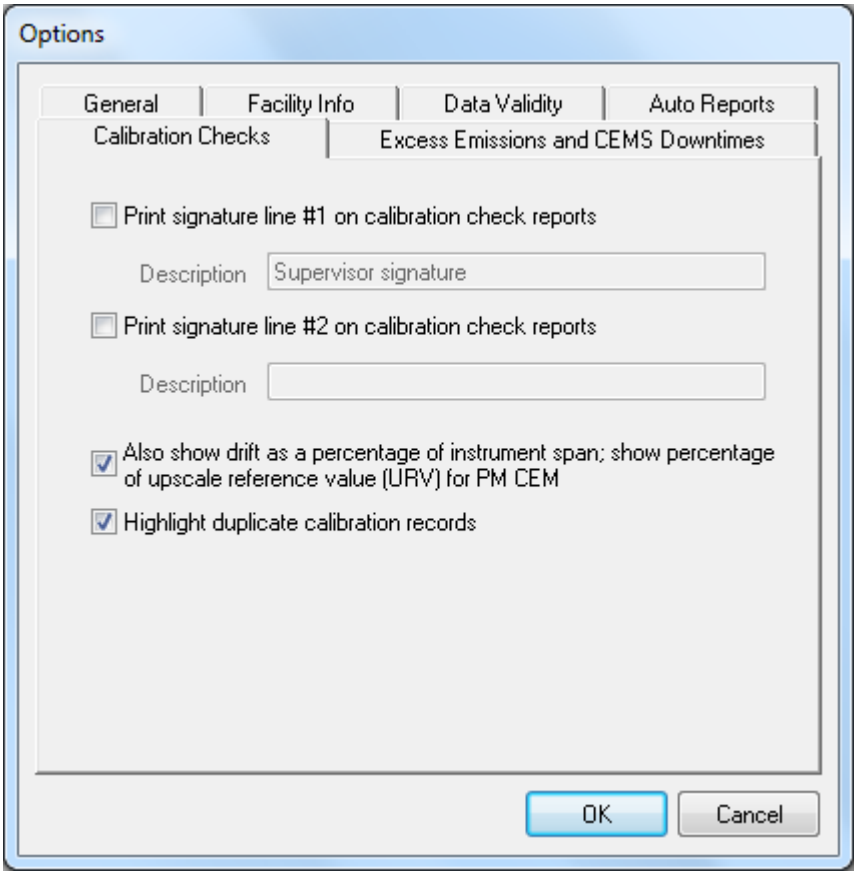
The Default button provides the typical command line that Cedar uses. Several items must be configured before the command line will work, such as the SMTP (mail) server, account name (if any), password (if any), and TCP port.

The Test button attempts to send a sample email to check whether the command line and mail server are configured correctly.

Contact CiSCO software support if you need assistance configuring this command line.

Calibration Checks

These options apply to calibration check reports.



Print signature line #1 on calibration check reports

This option prints a signature line at the bottom of the calibration check report. The description is printed below the signature line.

This feature is useful for facilities that require a supervisor to sign off on a daily calibration check report.

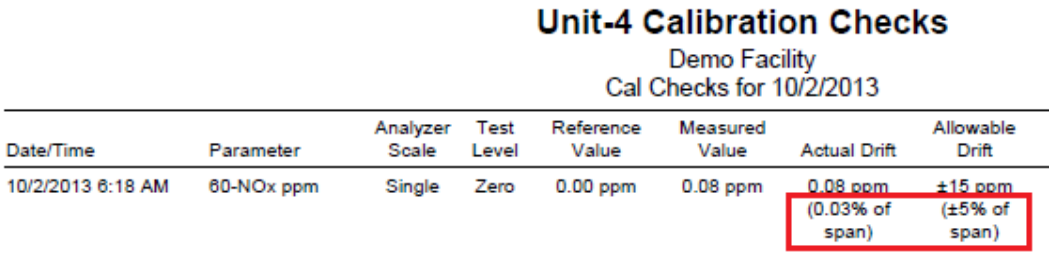
Print signature line #2 on calibration check reports

This option prints a second signature line on each calibration check report. The description is printed below the signature line.

Also show drift as percentage of instrument span

When this option is selected, calibration check reports also display the drift as a percentage of instrument span. For a PM CEMS, the drift percentage is based on the upscale reference value (URV).

The drift percentage is highlighted in this example.



Unit-4 Calibration Checks

Demo Facility
Cal Checks for 10/2/2013

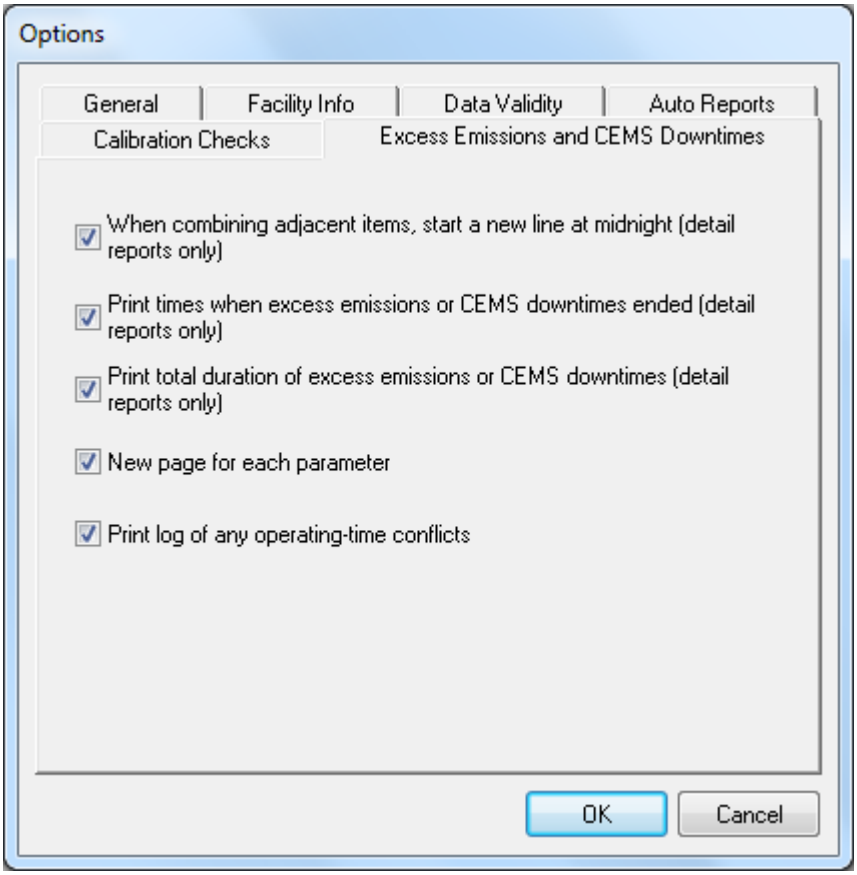
Date/Time	Parameter	Analyzer Scale	Test Level	Reference Value	Measured Value	Actual Drift	Allowable Drift
10/2/2013 6:18 AM	60-NOx ppm	Single	Zero	0.00 ppm	0.08 ppm	0.08 ppm (0.03% of span)	±15 ppm (±5% of span)

Highlight duplicate calibration records

When this option is selected any duplicate calibration records are highlighted on the report. This can be useful for diagnosing uncommon situations involving duplicate calibration data.

Excess Emissions and CEMS Downtimes

These options apply to excess emissions and CEMS downtimes reports.



Start a new line at midnight

This option applies when the "combine adjacent times into one line" box (on the main window) is checked for excess emissions and CEMS downtime reports.

When this box is **not** checked, adjacent items are combined without restriction. When this box **is** checked, adjacent items on the same day are combined. Adjacent items on different days are not combined.

This option can make excess emission and CEMS downtime reports easier to read, since it is very clear where a new day begins.

This option only applies to detail reports; it does not apply to summary reports.

Print times when excess emissions or CEMS downtimes ended

When this option is selected, the report includes the date and time when the excess emission or CEMS downtime ended. The report always displays the start time and the duration.

This option only applies to detail reports; it does not apply to summary reports.

Print total duration of excess emissions or CEMS downtimes

When this option is selected, the report includes a total duration at the bottom.

This option only applies to detail reports; it does not apply to summary reports.

New page for each parameter

When this option is selected, the data for each parameter starts on a new page.

This option applies to summary reports and detail reports.

Print log of any operating-time conflicts

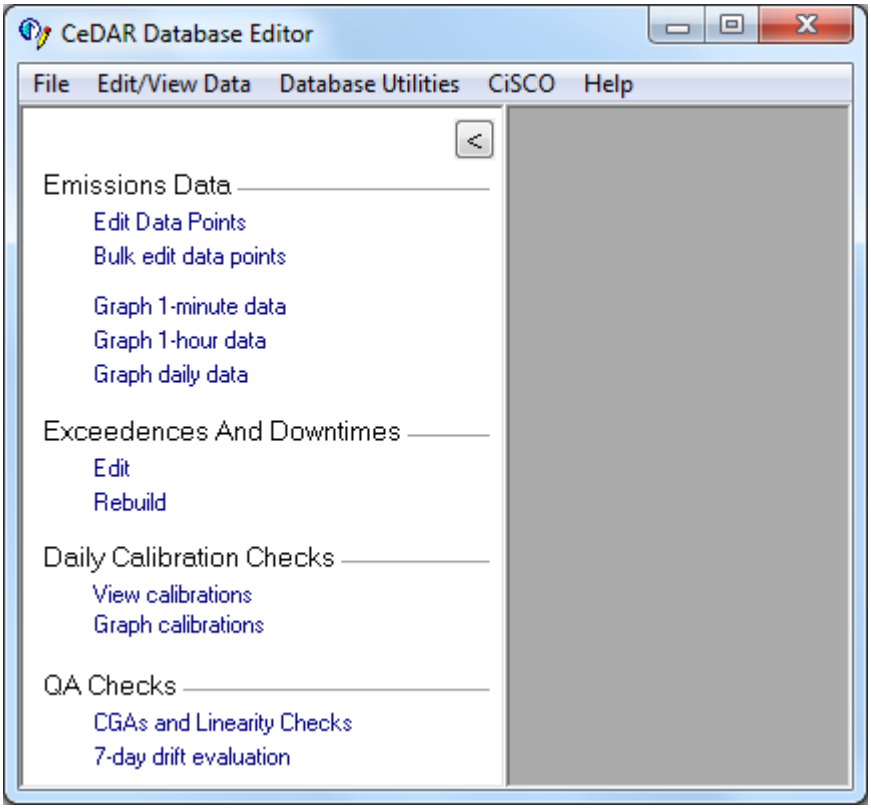
When this option is selected, the report generator checks for conflicts between the monitor codes and the excess emissions or CEMS downtimes. Any conflicts appear on a separate page at the end of the report. Conflicts indicate an inconsistency in the data and should be resolved.

This option applies to summary reports and detail reports.

Chapter 4: Data Editor

Overview

The Data Editor displays real-time data, alarms, and graphs. The main window shows a list of common tasks you can perform in the Data Editor. Click an item in the list to begin a task.



Data Editor File Menu

Change DAHS

This menu item is enabled if Cedar is configured for multiple DAHS computers. Click this item to switch to a different DAHS.

Security Setup - Accounts

Click this item to enable advanced Cedar security features and assign accounts to each of the Cedar privilege levels.

Security Setup - Permissions

Click this item to configure advanced Cedar security permissions for each of the Cedar privilege levels.

Print Screen

Prints a screen shot of the Data Editor window to the default printer.

Reports

Opens the Report Generator for displaying and printing reports.

Exit

Closes the Data Editor.

Edit/View Data Menu

Alarm Log

Displays alarms history.

View Calibration Checks

Displays calibration check history.

Graph Calibration Checks

Displays calibration checks in a graphical format.

Graph Data

Displays minute, hourly, and daily data in a graphical format.

Edit Data Points

Allows you to edit data points that are stored in the Cedar database.

Bulk Edit Monitor Codes and OpTimes

Allows you to quickly change monitor codes and operating time data for multiple parameters and large time periods. Only monitor codes and operating times may be changed with this feature.

Substitute Invalid Data Points

Allows you to perform missing data substitution for invalid data points. This feature is for sources that report substitute data per state or local requirements. This feature is not used for reporting emissions to USEPA for Part 75.

Rebuild data points

Allows you to rebuild (recalculate) data points.

Edit Excess Emissions and CEMS Downtimes

Displays excess emissions and CEMS downtimes data. Allows you to edit descriptions of the reasons and actions.

Rebuild Excess Emissions and CEMS Downtimes

Allows you to rebuild (recalculate) excess emissions and CEMS downtimes based on the underlying data.

Edit CGAs and Linearity Checks

Allows you to view and edit data for CGAs and linearity checks.

Evaluate Linearity Checks for Operating Hours

Checks unit operating hours and linearity checks to determine whether the necessary linearity checks have been performed for the current quarter. This feature is for sources that are subject to 40 CFR 75.

Settings

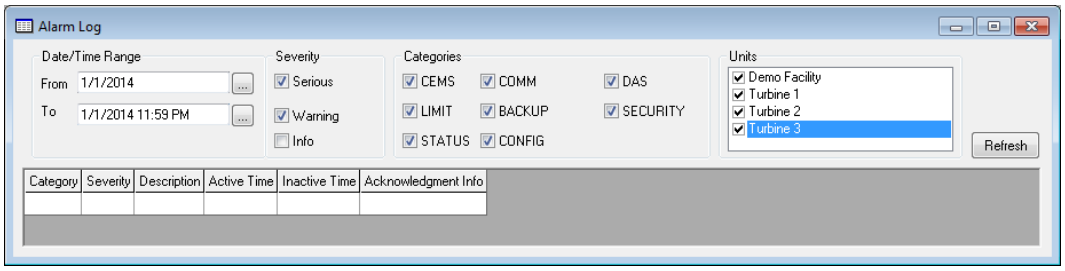
Displays the settings / constants defined in Cedar. With appropriate privileges, the settings may be edited.

Analyzer and Monitor Information

Displays basic information about the analyzers and monitors that are used for monitoring emissions.

Alarm Log

In the Data Editor menu, click Edit/View Data > Alarm Log. The Alarm log window opens.

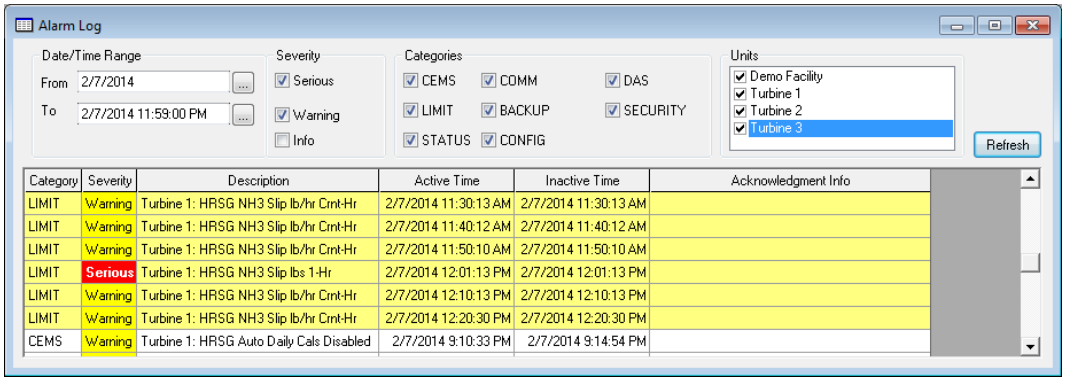


Enter the From and To dates and times for the date range you wish to view. The date range automatically defaults to midnight of the previous day and the current date and time.

Check the boxes for the alarm severities and alarm categories you want to see.

Some alarms are specific to a plant unit. Select the unit(s) you want to see. Alarms which are not unit-specific appear regardless of which units are selected.

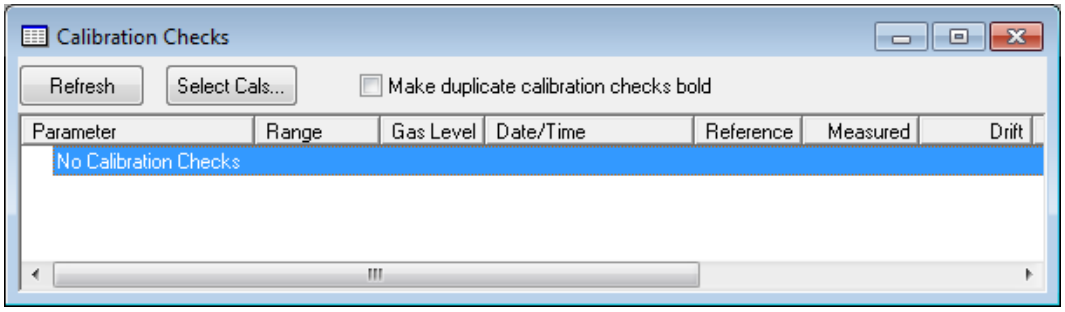
Click the Refresh button. The Alarm Log will display information for each alarm. indicating the time an alarm came on, when the alarm was cleared and when the alarm was acknowledged for the time range you selected.



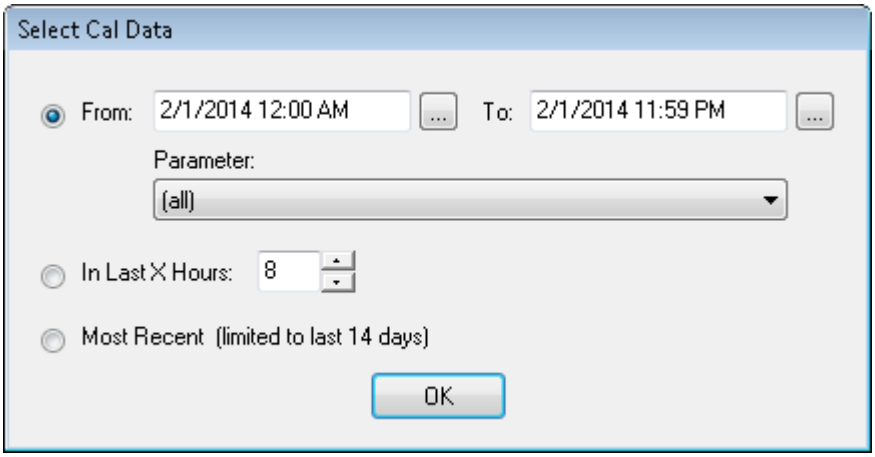
View Calibration Checks

Calibration checks can be viewed from within the Database Editor without having to print a calibration checks report.

In the Data Editor menu, click Edit/View Data > View Calibration Checks. A blank Calibration Checks window opens.



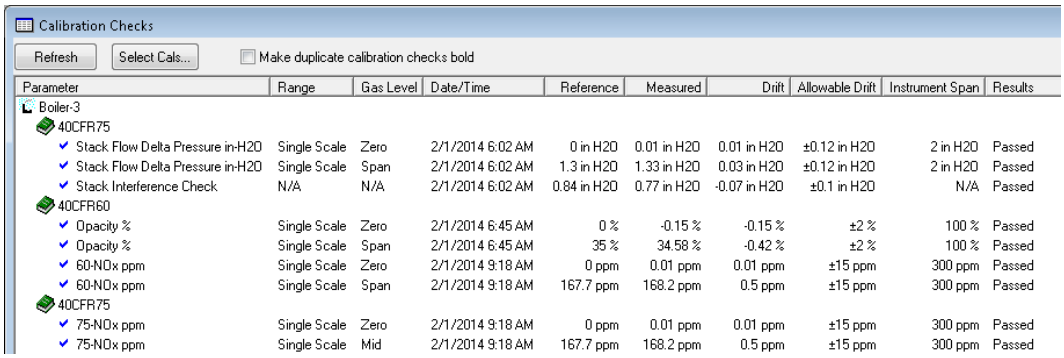
Click the Select Cals button. The Select Cal Data window opens.



The following options are available:

- Enter the time frame you wish to view. Also select specific parameters from the pull down menu or view all parameters.
- View Parameters in the last 1-72 hours.
- View most recent calibrations (within the last 14 days).

Click OK. The calibration checks are displayed in the window.



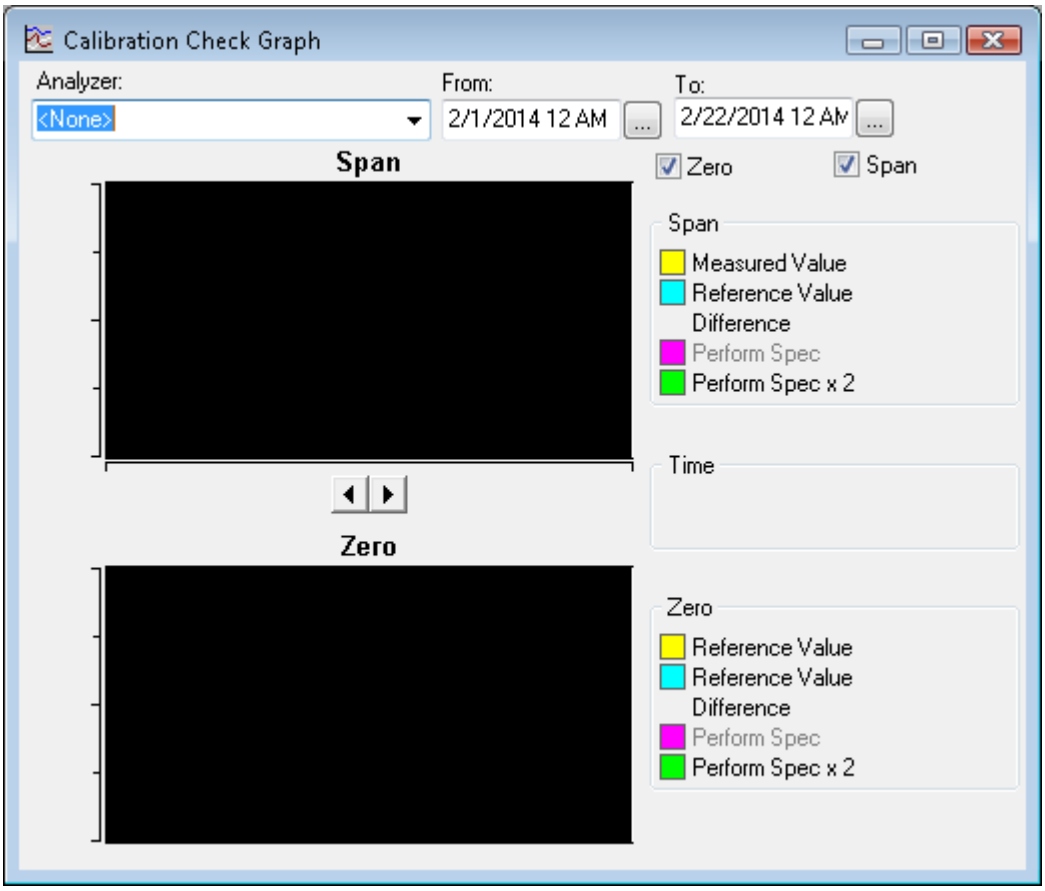
Parameter	Range	Gas Level	Date/Time	Reference	Measured	Drift	Allowable Drift	Instrument Span	Results
Boiler-3									
40CFR75									
Stack Flow Delta Pressure in-H20	Single Scale	Zero	2/1/2014 6:02 AM	0 in H20	0.01 in H20	0.01 in H20	±0.12 in H20	2 in H20	Passed
Stack Flow Delta Pressure in-H20	Single Scale	Span	2/1/2014 6:02 AM	1.3 in H20	1.33 in H20	0.03 in H20	±0.12 in H20	2 in H20	Passed
Stack Interference Check	N/A	N/A	2/1/2014 6:02 AM	0.84 in H20	0.77 in H20	-0.07 in H20	±0.1 in H20	N/A	Passed
40CFR60									
Opacity %	Single Scale	Zero	2/1/2014 6:45 AM	0 %	-0.15 %	-0.15 %	±2 %	100 %	Passed
Opacity %	Single Scale	Span	2/1/2014 6:45 AM	35 %	34.58 %	-0.42 %	±2 %	100 %	Passed
60-NOx ppm	Single Scale	Zero	2/1/2014 9:18 AM	0 ppm	0.01 ppm	0.01 ppm	±15 ppm	300 ppm	Passed
60-NOx ppm	Single Scale	Span	2/1/2014 9:18 AM	167.7 ppm	168.2 ppm	0.5 ppm	±15 ppm	300 ppm	Passed
40CFR75									
75-NOx ppm	Single Scale	Zero	2/1/2014 9:18 AM	0 ppm	0.01 ppm	0.01 ppm	±15 ppm	300 ppm	Passed
75-NOx ppm	Single Scale	Mid	2/1/2014 9:18 AM	167.7 ppm	168.2 ppm	0.5 ppm	±15 ppm	300 ppm	Passed

The calibration checks are organized by unit. Each unit is identified with the smokestack icon and the name of the unit. Units are divided into sections by regulations. The book icon followed by a regulatory reference such as 40CFR60 or 40CFR75.

A blue check mark indicates a passed calibration. A red “X” indicates a failed calibration. The Results column gives a more detailed explanation of the fail status.

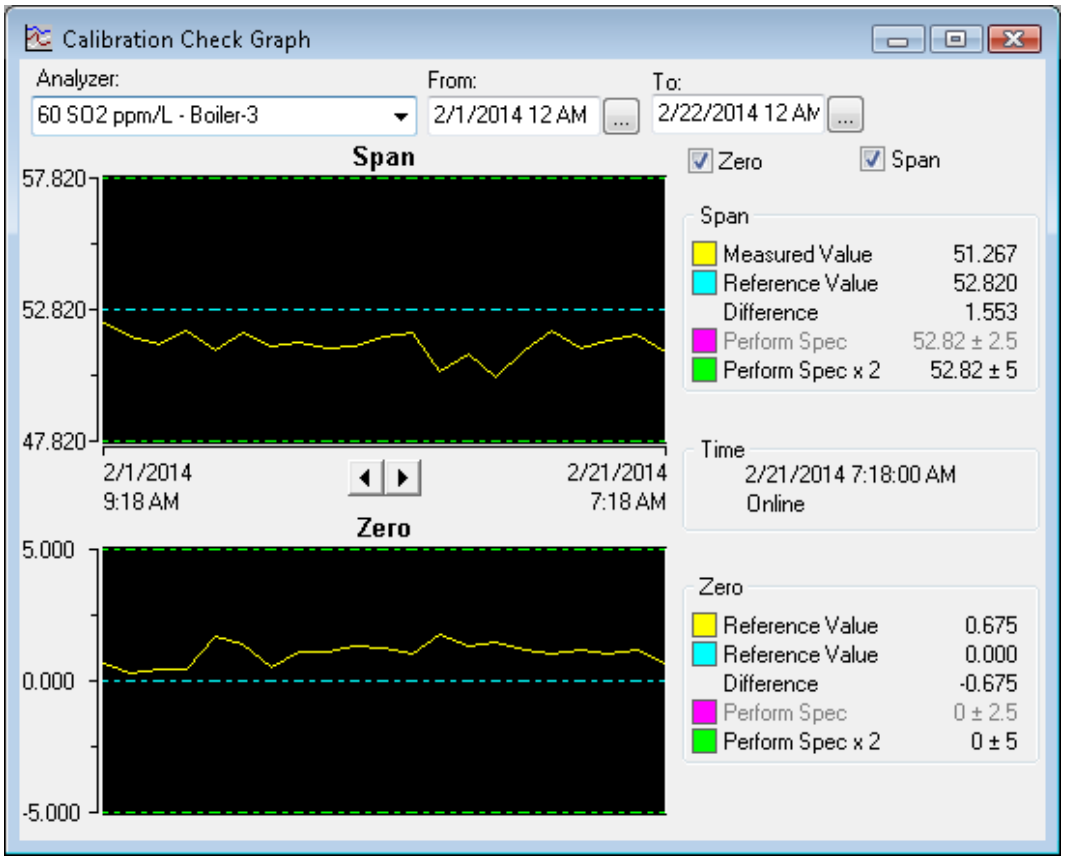
Graph Calibration Checks

Calibration checks can be displayed in graphical format. In the Data Editor menu, click Edit/View Data > Graph Calibration Checks. A blank Calibration Check Graph window opens.



Select an analyzer from the pull down menu. Enter the time period in the From and To boxes.

The values for Span and Zero are graphed.



Show/hide Performance Specification

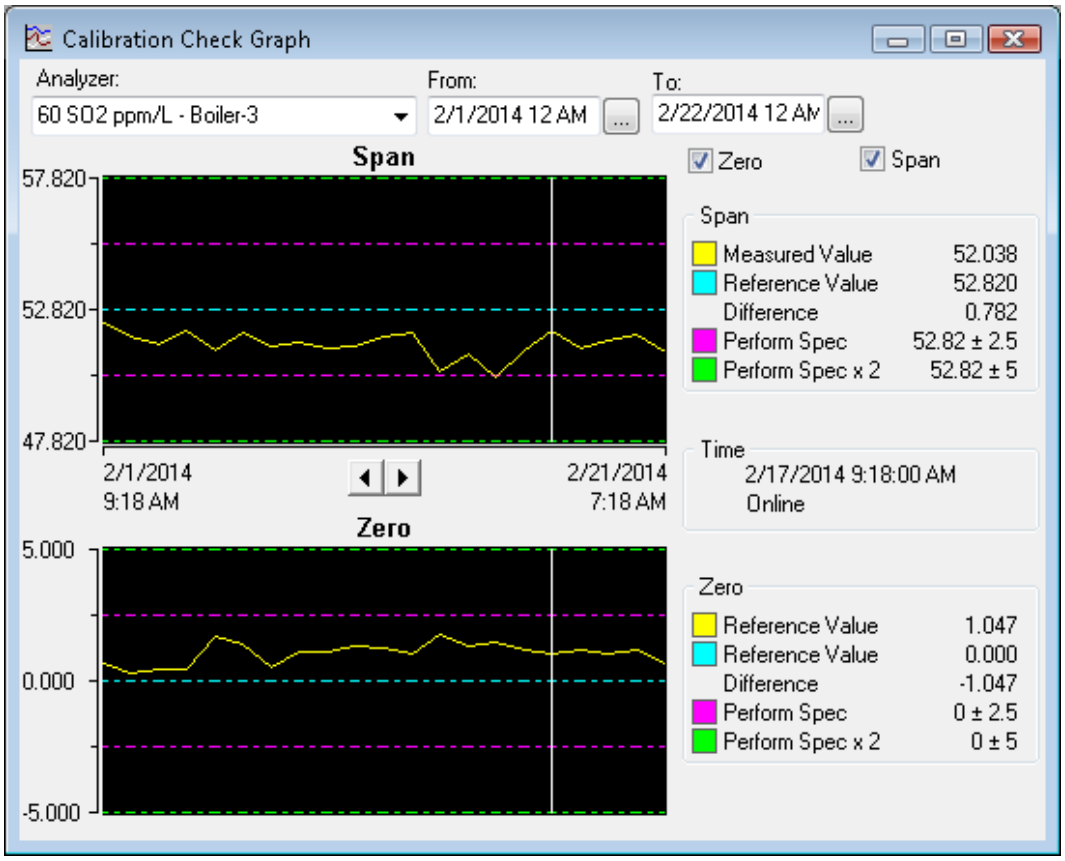
To show or hide the Performance Specification, click the colored box next to "Perform Spec". The performance specification is used when performing a 7-day drift check.

Show/hide Performance Specification x 2

To show or hide the Performance Specification times two, click the colored box next to "Perform Spec x 2". The performance specification times 2 is typically the daily calibration drift limit. However, some regulations define a different daily calibration drift limit.

Cursor

Click anywhere in the graph to display the cursor. The values on the right side display the calibration data for the selected calibration check.

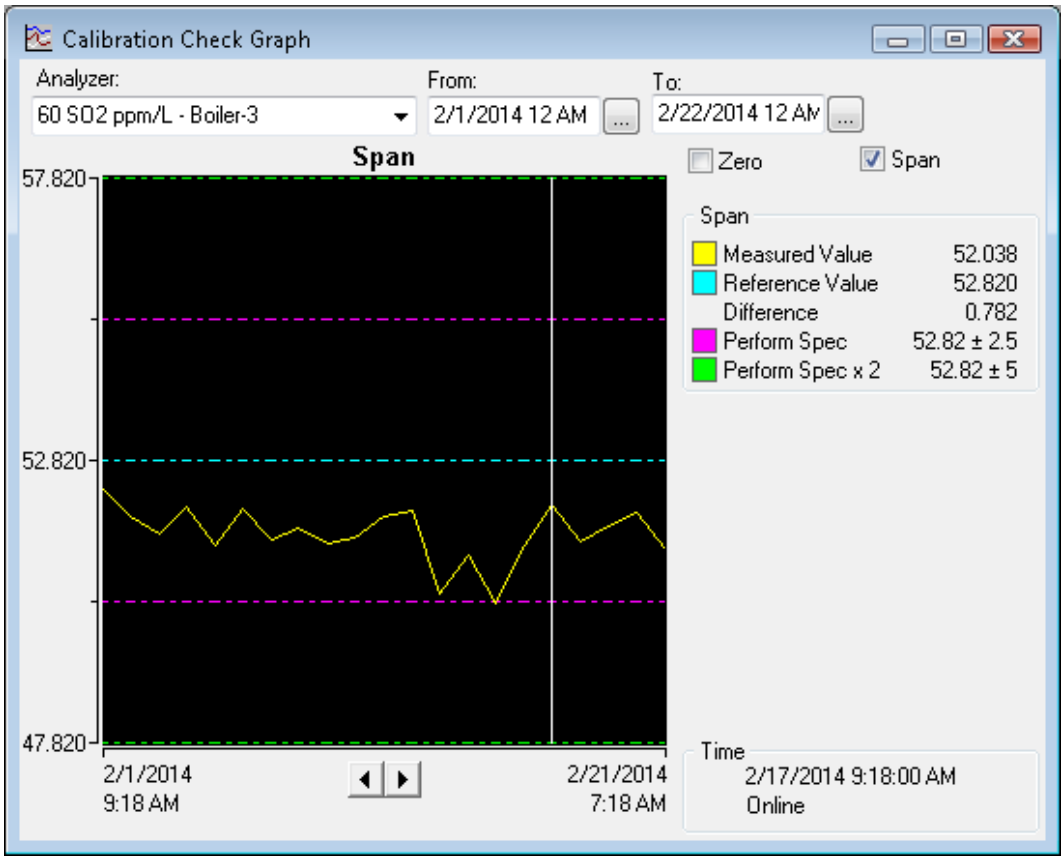


Calibration check date/time and Online/offline indicator

The date and time that correspond with the position of the cursor are displayed in the "Time" box on the right. This box may also show whether the calibration check was performed while the unit was online or offline. The box may show whether the calibration was started manually or automatically.

Show only Zero or Span

You can view the Zero or Span values separately by checking or un-checking the Zero and Span boxes.



Line colors

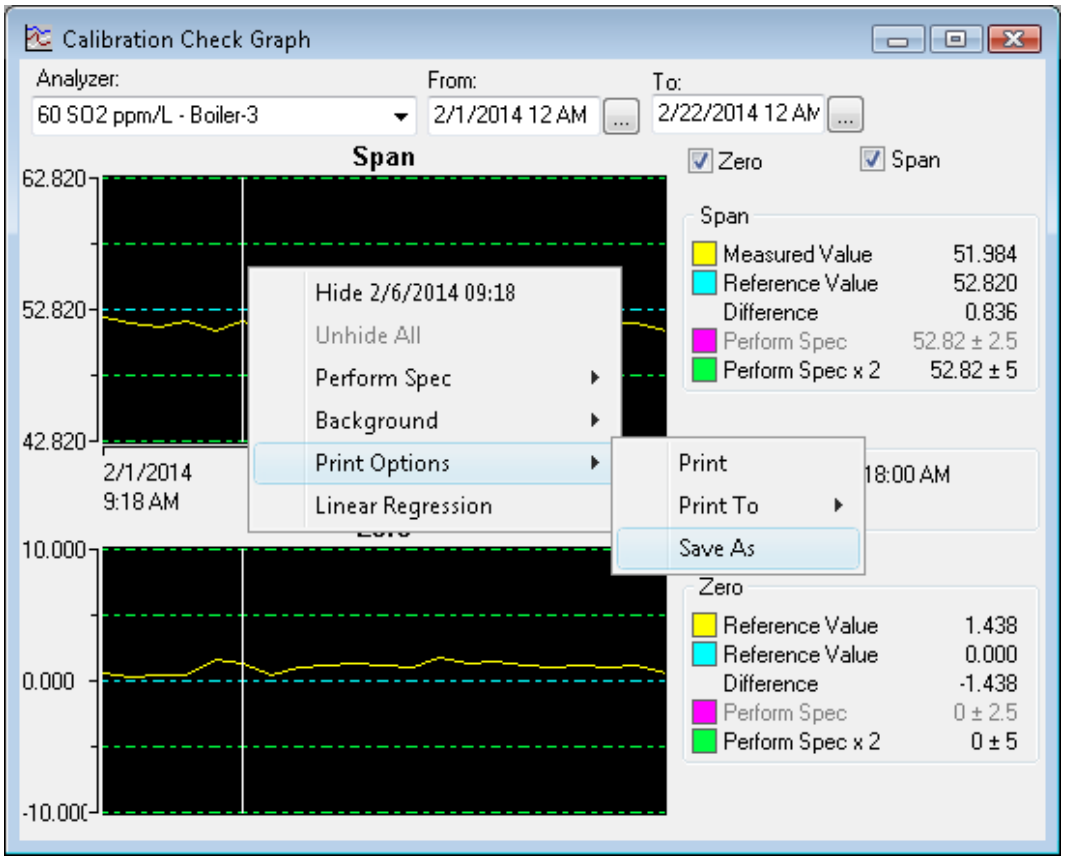
The legend on the right identifies the colors and values for each line displayed on the graph. To change the color of a line, double click on the color box. Select a new color and click OK.

Time scroll

The time range appears at the bottom of the graph. Use the arrow buttons in the center of the window to scroll forward or scroll backward in time.

Menu

Right click on the graph to display a menu with additional options.



Hide (date/time)

Removes the selected calibration check from the graph. This can be useful when you want to compare calibration checks that are not consecutive.

Unhide All

Displays any calibration checks that have been hidden.

Perform Spec

Shows or hides lines for the performance specification, times 2, and times 4.

Background color

Changes the background color of the graph.

Print Options

Allows you to print the graph on your default printer, or send the graph to another printer. You can also save the graph as a PDF file.

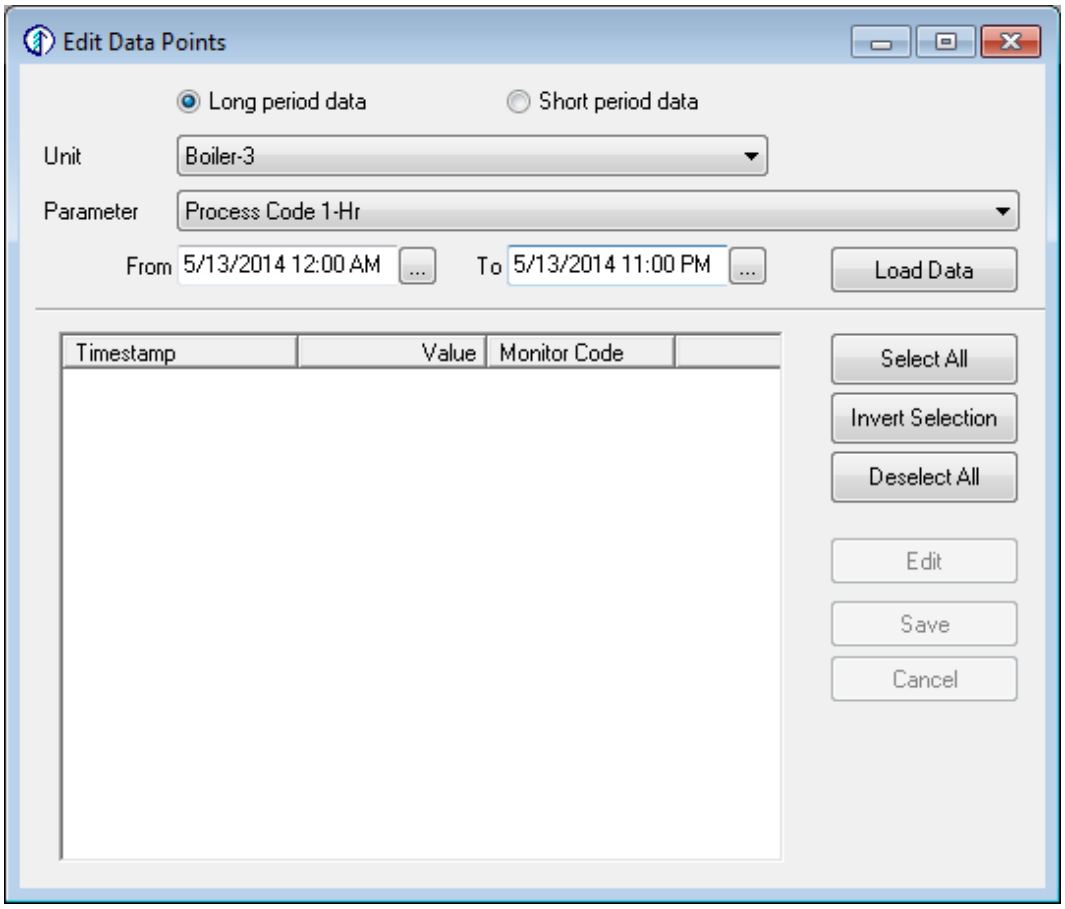
Linear Regression

Displays a message that indicates whether the measured value is currently increasing or decreasing, and projects when the value will exceed the daily drift limits if it drifts at a constant rate.

Edit Data Points

In the Data Editor menu, click Edit/View Data > Edit Data Points. The window may take a minute to appear while it loads the Cedar configuration.

The Edit Data Points window opens.



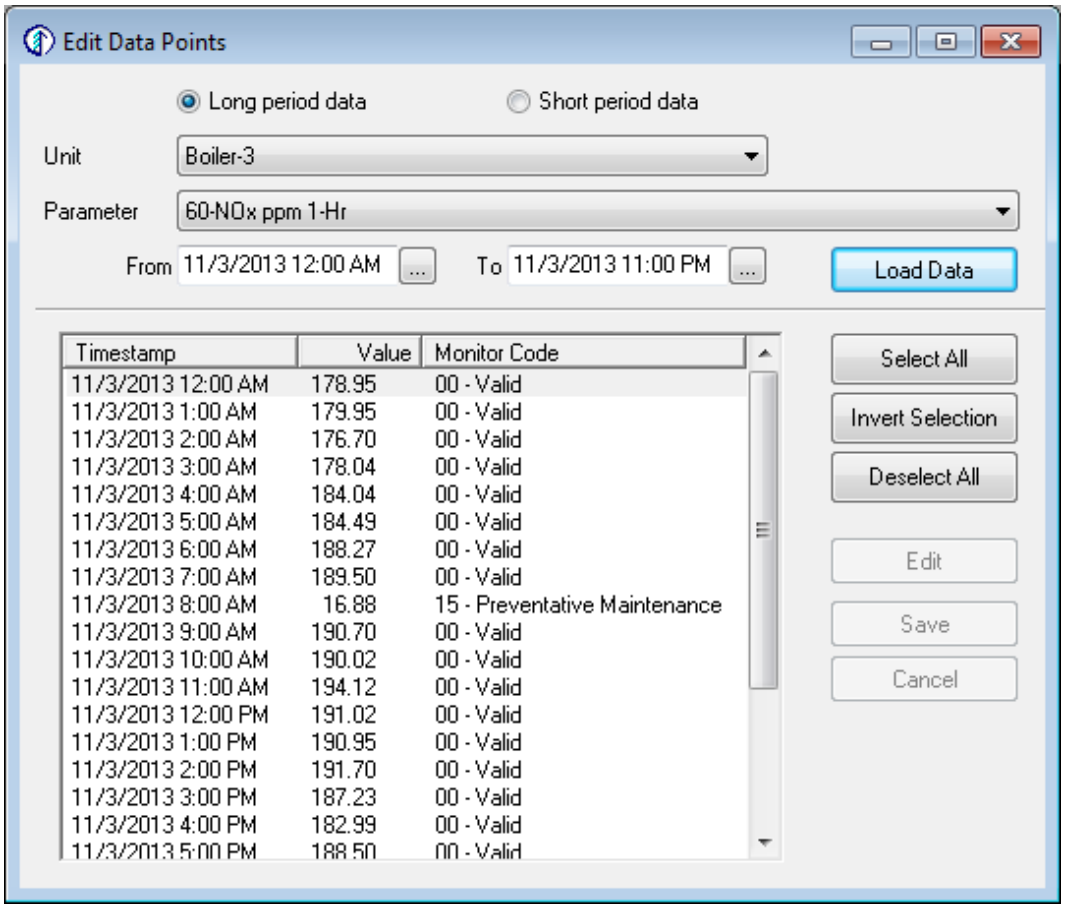
Loading Data

Use the pull down menus to select a Unit, Period, and Parameter.

- **Long period data** is usually 1-hour data. Opacity data is usually 6-minute or 3-minute data. Other period lengths are possible, such as 15-minute, 3-hour, and 24-hour data.
- **Short period data** is usually 1-minute data. Short period data is typically read-only and not available for editing.

Click the Load Data button.

The data points appear in the window.



If an **operating time parameter** is selected, the values represent the portion of an hour when the process or parameter was operating. A time value of 0.00 means the parameter did not operate during the hour. A value of 1.00 means the parameter operated for the entire hour. Operating Time parameters do not have Monitor Codes.

Process code parameters do not have monitor codes.

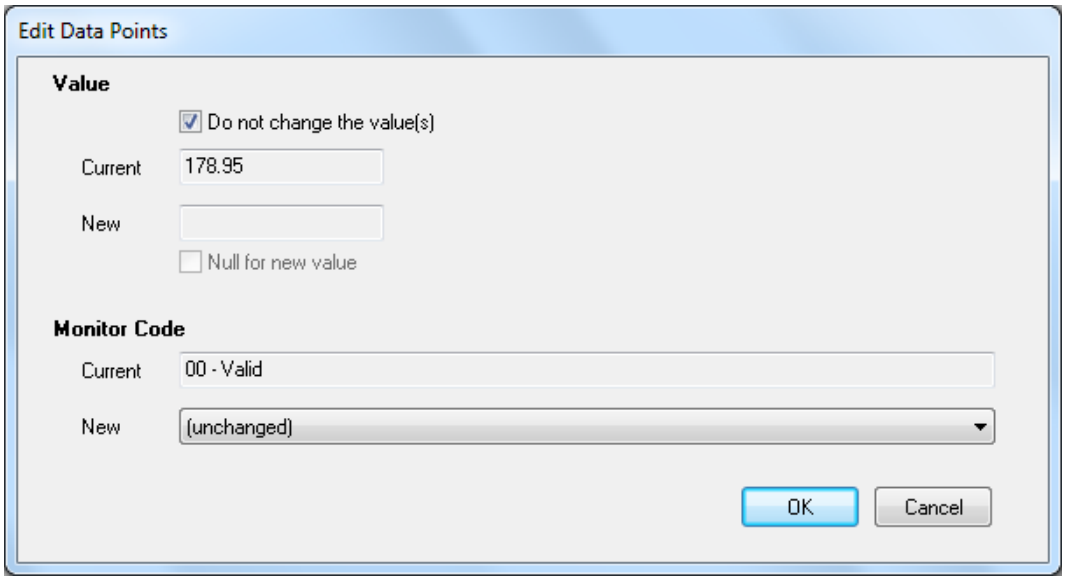
Editing Data

Select data points to edit. There are several ways to select data points.

- To select one data point, click on the row.
- To select a block of data points, click the first row. Hold the Shift key and click the last row in the block.
- To select non-contiguous data points, hold the Ctrl key and click each row.
- Click the Select All button to select all the rows.
- Click the Invert Selection button to "flip" the selected/unselected state of all the rows. This is useful if you want to edit all the data points except for a few rows.

Click the Edit button.

A window allows you to change the value and monitor code.



The current parameter Value and Monitor Code are displayed. If you have selected more than one data point to edit and the current Values and/or Monitor Codes are not the same, the field will display “multiple”.

Value

When editing data points, it is common to change only the monitor code and not change the value. By default, the "Dont' change the value(s)" box is checked. To edit the value, uncheck the box.

To store no numeric value, check the "Null for new value" box. This is not common.

Warning

Use caution when editing data. Values and Monitor Codes should only be edited when there is a sound technical basis for the change. Editing data without valid justification violates environmental regulations.

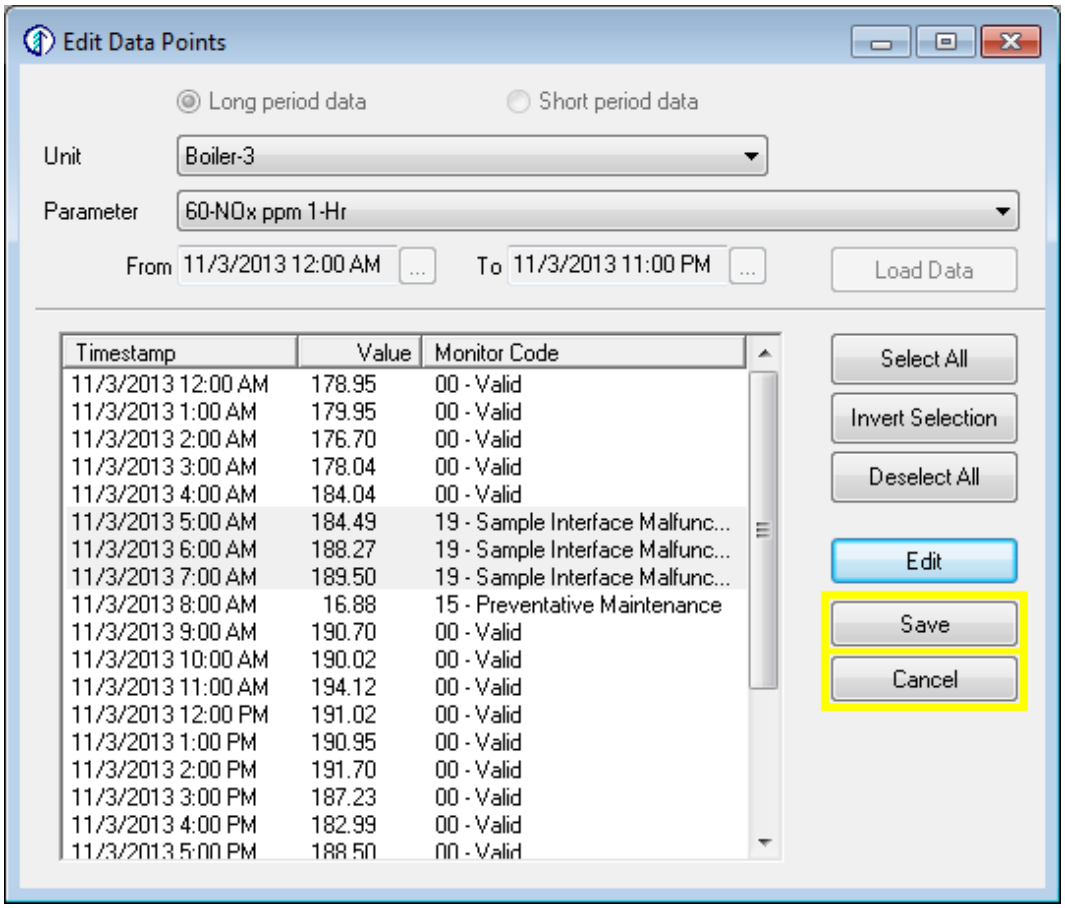
Monitor Code

Use the pull down menu to select a Monitor Code.

The Monitor Code fields are disabled for Operating Time parameters and Process Code parameters, since they do not have monitor codes.

Saving Changes

After changing one or more data points, the changes need to be saved to the database. You must save or cancel the changes before selecting a different unit, parameter, or time period.



The Save and Cancel buttons are highlighted. Click one of them to save or discard your changes.

Note

After data points have been modified, excess emission and/or CEMS downtime data may need to be rebuilt (recalculated).

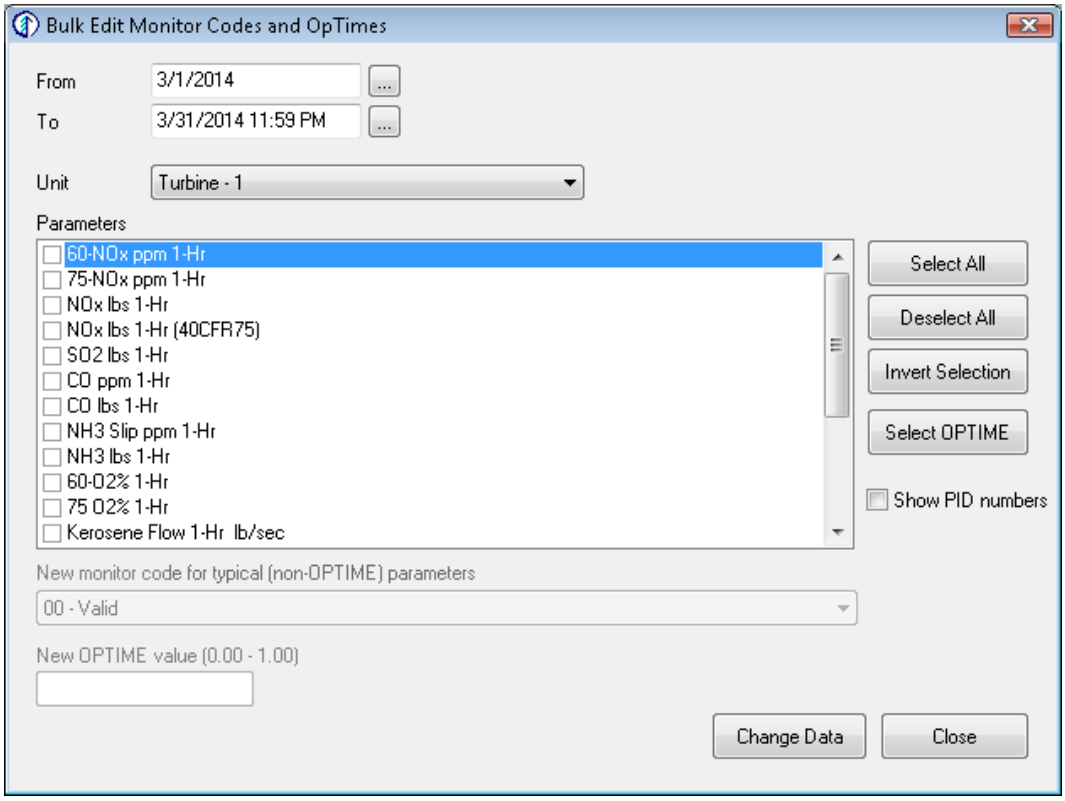
Bulk Edit Monitor Codes and OpTimes

Monitor codes and operating time data can be quickly changed for multiple parameters and large time periods. Only monitor codes and operating times may be changed in this window.

This tool is especially useful for marking data as offline or invalid for large periods of time.

In the Data Editor menu, click Edit/View Data > Bulk Edit Monitor Codes and OpTimes. The window may take a minute to appear while it loads the Cedar configuration.

The Bulk Edit Monitor Codes and OpTimes window opens.



Enter the time frame for the data points that will be changed. Select a unit from the pull down menu.

The list displays the long period parameters (usually 1-hour data) for the selected unit. Operating time parameters show "[OPTIME]" next to the parameter name.

Select the parameters you wish to edit. Select individual parameters by checking the box next to the parameter name. The Select All, Deselect All, and Invert Selection buttons are also available.

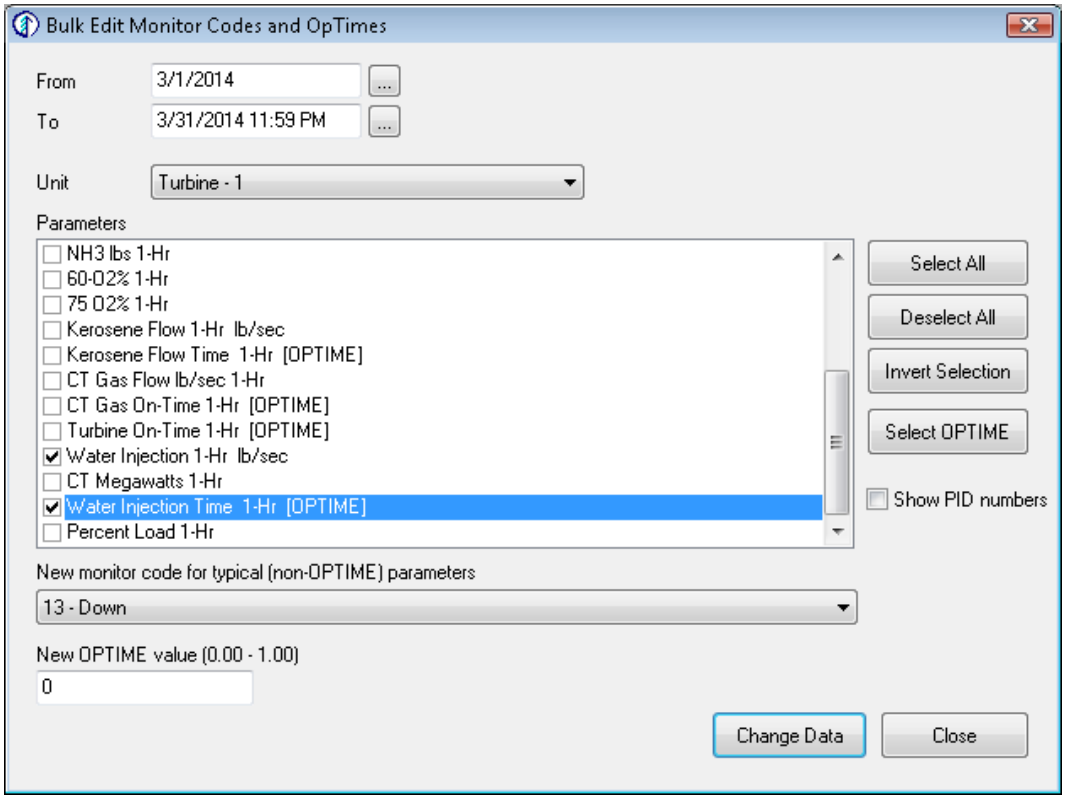
Click the Select OPTIME button to select only the operating time parameters.

When you select a normal (non-OPTIME) parameter, the "New monitor code for normal parameters" box is enabled. Select a new monitor code from the pull-down menu.

When you select an operating time (OPTIME) parameter, the "New OPTIME value (0.00 – 1.00)" box is enabled. Enter a value between 0.00 and 1.00, which represents the portion of the hour that the parameter operated.

Both OPTIME and non-OPTIME parameters may be selected and changed in one operation.

The Show PID Numbers box is used by CiSCO support personnel to display the internal parameter IDs.



Click the Change Data button.

A message box notifies you that the edits may take some time. Once the process has begun, there is no way to cancel it. It will continue until the data has been modified. Click OK or Cancel.

A progress window displays the status of the operation.

A message box notifies you when the operation is complete. The message box indicates the number of data points changed and the time it took to complete the operation. This can be used to estimate the time required for further edits.

Note

After data points have been modified, excess emission and/or CEMS downtime data may need to be rebuilt (recalculated).

Substitute Invalid Data Points

This feature is not applicable to most facilities. This feature is configured for your facility if required by the permit.

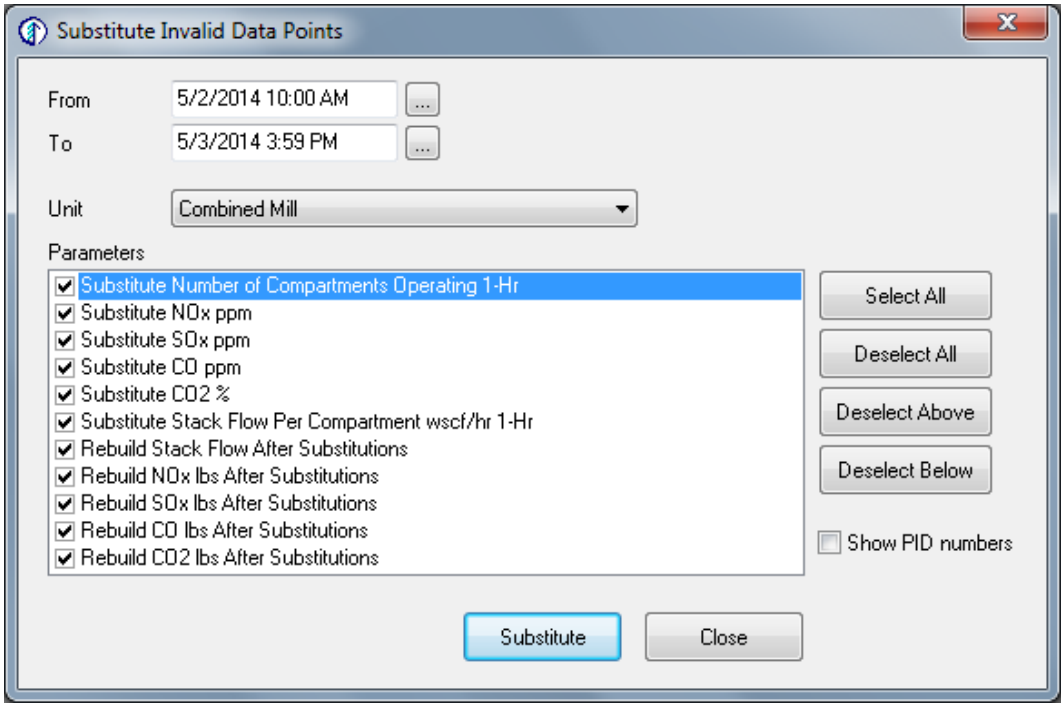
Note

This window does **not** perform Part 75 missing data substitution for data that is submitted to USEPA in quarterly electronic reports. The Part 75 reporting software substitutes missing data before it generates the quarterly report.

Some facilities are required to substitute missing data for periods when the CEMS data is invalid. Cedar typically performs the missing data substitution while it acquires data, but missing data substitution may need to be performed again, especially if data is changed or edited.

In the Data Editor menu, click Edit/View Data > Substitute Invalid Data Points. The window may take a minute to appear while it loads the Cedar configuration.

The Substitute Invalid Data Points window opens.



Enter the time frame to rebuild. Select a unit from the pull down menu.

The list displays the available parameters for the selected unit. The parameter list is blank unless this feature is configured for your facility.

Select the parameters you wish to edit. Select individual parameters by checking the box next to the parameter name. The Select All, Deselect All, Deselect Above, and Deselect Below buttons are also available.

The Show PID Numbers box is used by CiSCO support personnel to display the internal parameter IDs.

Click the Substitute button.

A message box notifies you that the substitution operation may take some time.

A progress window displays the status of the operation. A message box notifies you when the operation is complete. The message box indicates the number of data points changed and the time it took to complete the operation.

Note

After data points have been modified, excess emissions data may need to be rebuilt (recalculated) if permit limits apply to the data that was substituted.

Rebuild Data Points

This tool allows some calculated data to be rebuilt (recalculated) from underlying data. For example, 1-hour data may need to be rebuilt (recalculated) from 1-minute data. Or, 1-hour data (such as NOx lbs) may need to be recalculated from underlying 1-hour data.

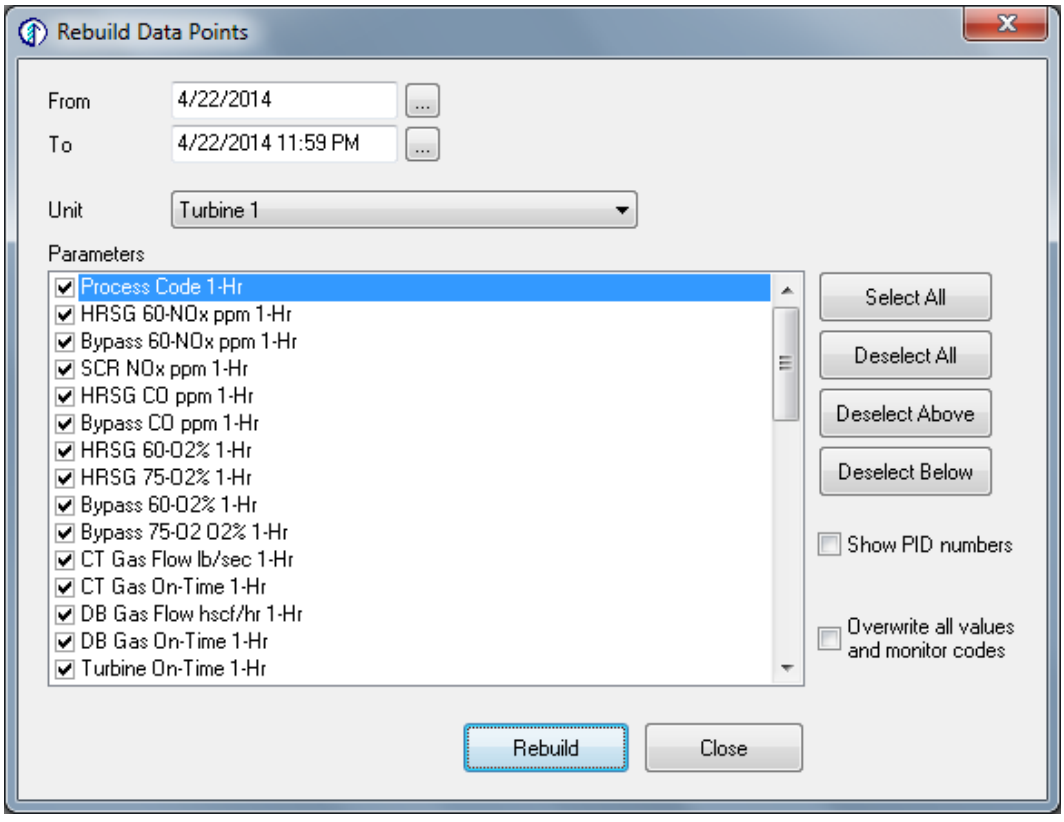
Caution

This tool can make irreversible changes to data. Not all data can be recalculated with this tool.

If you have any questions about the appropriate use of this tool, please contact CiSCO software support.

In the Data Editor menu, click Edit/View Data > Rebuild Data Points. The window may take a minute to appear while it loads the Cedar configuration.

The Rebuild Data Points window appears.



Enter the time frame to rebuild. Select a unit from the pull down menu.

The list displays the available parameters for the selected unit.

Select the parameters you wish to edit. Select individual parameters by checking the box next to the parameter name. The Select All, Deselect All, Deselect Above, and Deselect Below buttons are also available.

The Show PID Numbers box is used by CiSCO support personnel to display the internal parameter IDs.

Caution

Existing data that has already been edited may be overwritten with the recalculated data. For example, if some data points were originally valid and you have edited them to be invalid, rebuilding that data will probably make the data valid again.

To force edited invalid data to remain invalid, use monitor code 59. See additional notes below.

Check the "Overwrite all values and monitor codes" box to force all data points to be rebuilt in this operation. When this box is not checked, certain data points are not rebuilt.

Note

When the "Overwrite all values and monitor codes" box is **not checked**, data points with any of these monitor codes are **not rebuilt**:

36	Valid data, generated by PLC or other non-Cedar source. Measured value has been replaced with 200 % of Maximum Potential Concentration (MPC) or 200 % of full-scale range.
38	Valid Data, generated by PLC or other non-Cedar source
39	Offline data, generated by PLC or other non-Cedar source
59	Invalid Data, flagged by user; this monitor code may not be affected when data points are rebuilt/recalculated

Note

When the "Overwrite all values and monitor codes" box is **not checked**, an existing data point is **not modified** if the recalculated data point has a Null (blank/empty) value and monitor code 18. This can happen, for example, when attempting to rebuild 1-hour averages from 1-minute data, but the 1-minute data has been purged from the Cedar database.

Caution

When the "Overwrite all values and monitor codes" box is **checked**, and you are recalculating 1-hour data from 1-minute data, make sure the 1-minute data has not been purged from the Cedar database. If the 1-minute data has been purged, the 1-hour data will be overwritten with Null values and monitor code 18.

Caution

When the "Overwrite all values and monitor codes" box is **checked**, existing data that came from HDR may be overwritten with the recalculated data.

Click the Rebuild button.

A message box notifies you that the rebuild operation may take some time.

A progress window displays the status of the operation. A message box notifies you when the operation is complete. The message box indicates the number of data points changed and the time it took to complete the operation.

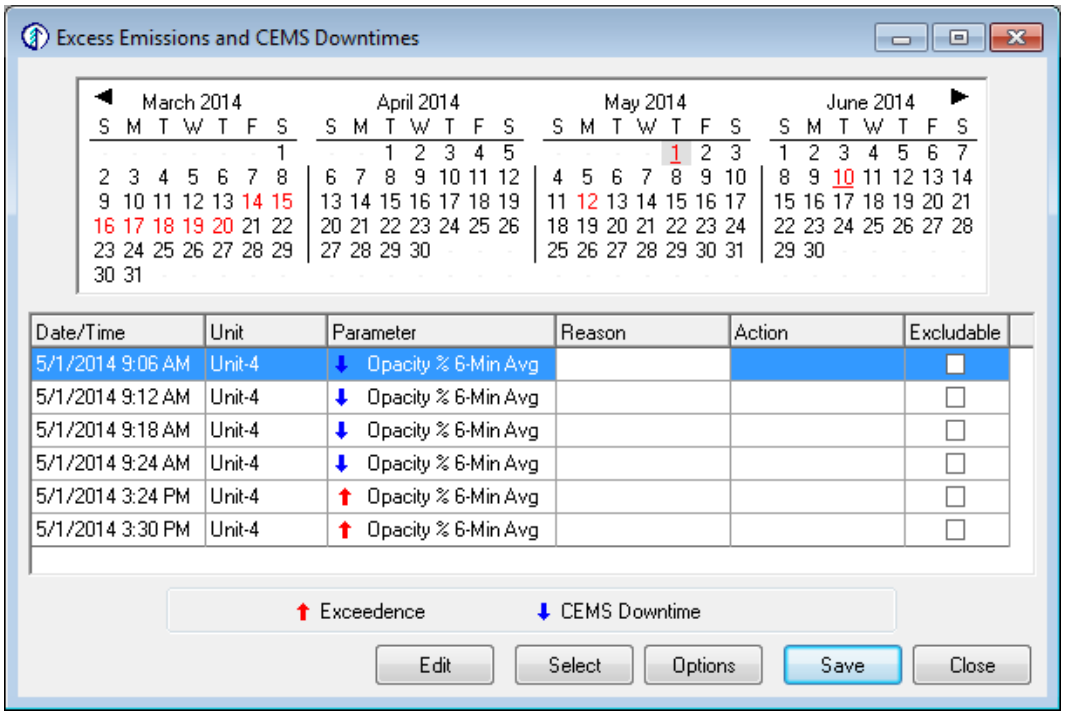
Note

After data points have been modified, excess emission and/or CEMS downtime data may need to be rebuilt (recalculated).

Edit Excess Emissions and CEMS Downtimes

In the Data Editor menu, click Edit/View Data > Edit Excess Emissions and CEMS Downtimes. The window may take a minute to appear while it loads the Cedar configuration.

The Edit Excess Emissions and CEMS Downtimes window opens.



Calendar

By default, the window displays a 4-month calendar.

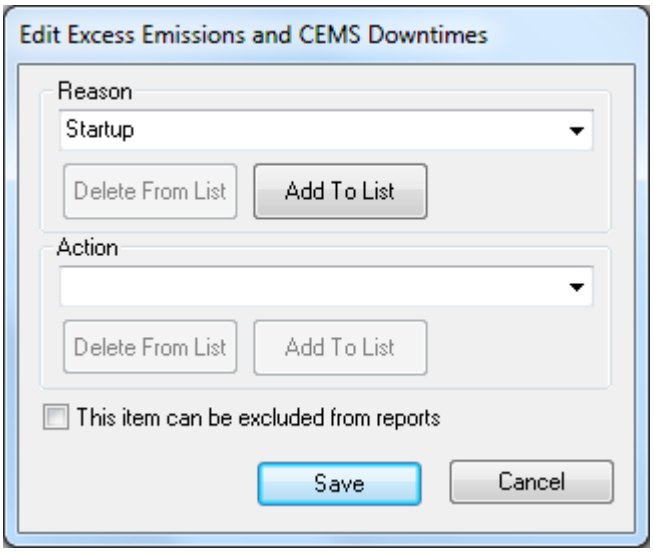
The selected day(s) have a gray background.

Days with excess emissions or CEMS downtimes have red text.

Cedar assumes that a reason needs to be entered for all excess emissions and CEMS downtimes. Days with excess emissions and CEMS downtimes that have a blank reason appear in red underline.

Edit

To edit the selected excess emissions or downtimes, click the Edit button. A window opens to allow you to edit the selected items.



Enter a reason, or select a reason from the list.

If an action is required, enter a reason or select a reason from the list.

Use the Add To List button to add a reason or action to the drop-down list. Use the Delete From List button to remove a reason or action from the drop-down list.

Check the "This item can be excluded from reports" box to prevent the item from appearing on reports. An item may be excluded from reports if allowed by the source's permit.

Click Save to save the changes.

Alternatively, reason text, action text, and the exclude status can be edited for single items directly in the grid.

Options

Click the Options button to see a menu of options.

Show Calendar

Shows or hides the calendar. This option is selected by default.

Show Excess Emissions

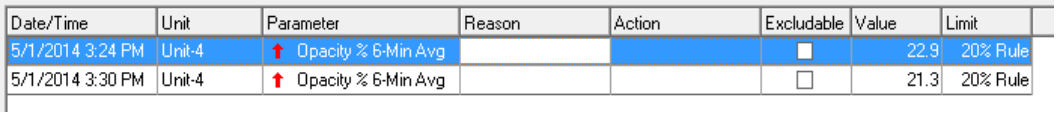
Shows or hides excess emissions. This option is selected by default. When this option is **not** selected, days the calendar will ignore days with excess emissions when it determines which days to display in red.

Show CEMS Downtimes

Shows or hides CEMS downtimes. This option is selected by default. When this option is **not** selected, days the calendar will ignore days with CEMS downtimes when it determines which days to display in red.

Show Values/Limits

This option only applies to excess emissions. This option shows or hides two additional columns, which display the value and the limit that was exceeded.



Date/Time	Unit	Parameter	Reason	Action	Excludable	Value	Limit
5/1/2014 3:24 PM	Unit-4	Opacity % 6-Min Avg			☐	22.9	20% Rule
5/1/2014 3:30 PM	Unit-4	Opacity % 6-Min Avg			☐	21.3	20% Rule

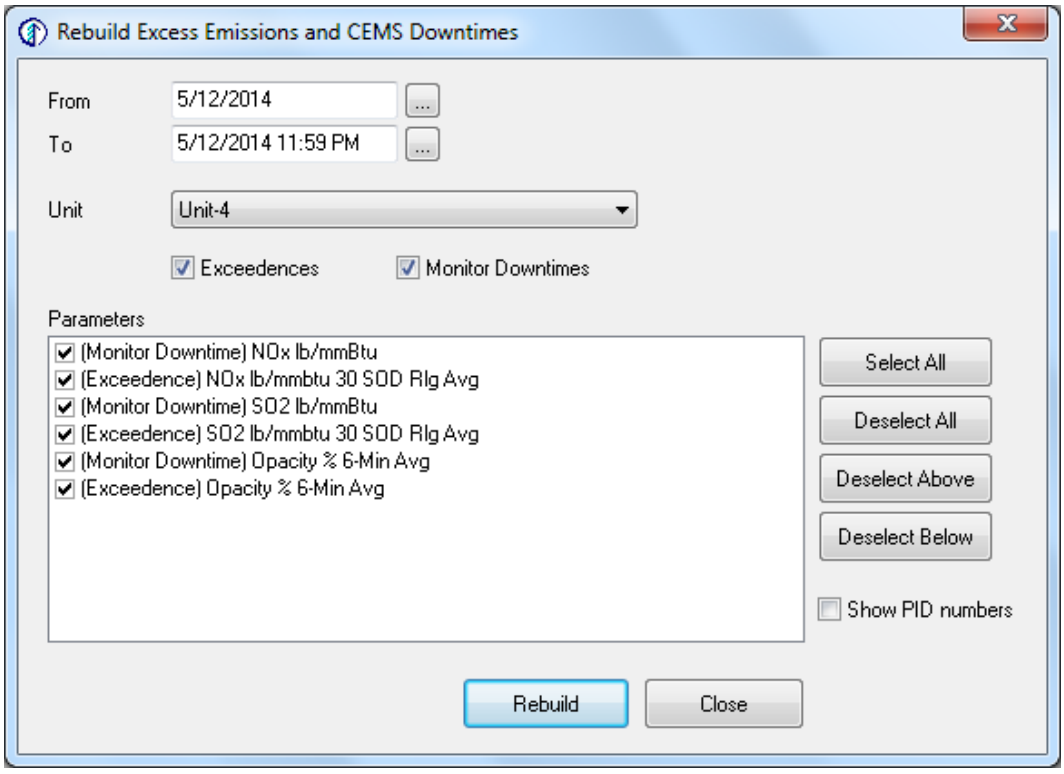
Rebuild Excess Emissions and CEMS Downtimes

An excess emission occurs when a source exceeds a permit limit. A CEMS downtime occurs when an emissions monitoring system or other monitor is not operating or collecting valid data.

Cedar performs the initial checks for excess emissions and CEMS downtimes as data points are collected and written to the database. Excess emissions and CEMS downtimes may need to be rebuilt (recalculated) after data has been modified.

In the Data Editor menu, click Edit/View Data > Rebuild Excess Emissions and CEMS Downtimes. The window may take a minute to appear while it loads the Cedar configuration.

The Rebuild Excess Emissions and CEMS Downtimes window appears.



Enter the time frame to rebuild. Select a unit from the pull down menu.

The list displays the exceedence and/or CEMS downtime parameters for the selected unit.

Select the parameters you wish to edit. Select individual parameters by checking the box next to the parameter name. The Select All, Deselect All, and Invert Selection buttons are also available.

The Show PID Numbers box is used by CiSCO support personnel to display the internal parameter IDs.

Click the Rebuild button.

A message box notifies you that the rebuild operation may take some time.

A progress window displays the status of the operation. A message box notifies you when the operation is complete. The message box indicates the number of exceedences and CEMS downtimes that were added and/or deleted.

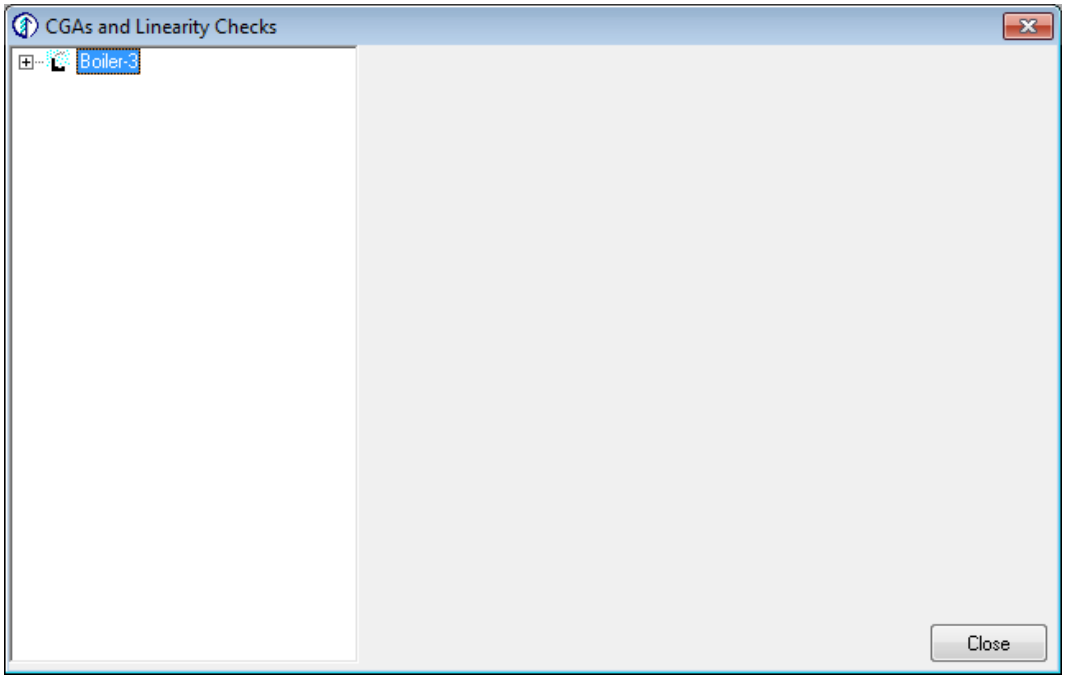
Note

If the rebuild operation added new exceedences or CEMS downtimes, you will need to edit the reason text for the new exceedences or CEMS downtimes.

Edit CGAs and Linearity Checks

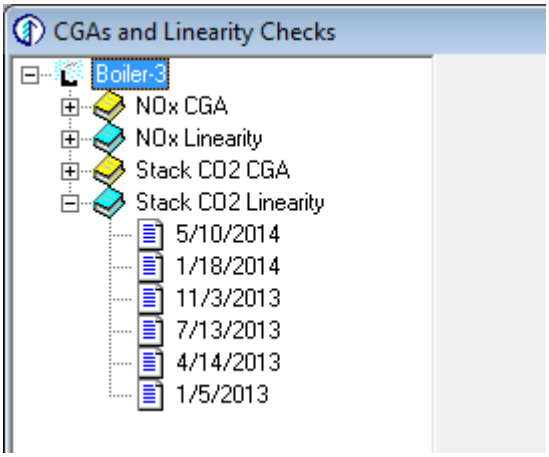
In the Data Editor menu, click Edit/View Data > Edit CGAs and Linearity Checks. The window may take a minute to appear while it loads the Cedar configuration.

The CGAs and Linearity Checks window opens.



Click the (+) to expand the unit and view the kinds of available CGAs and linearity checks.

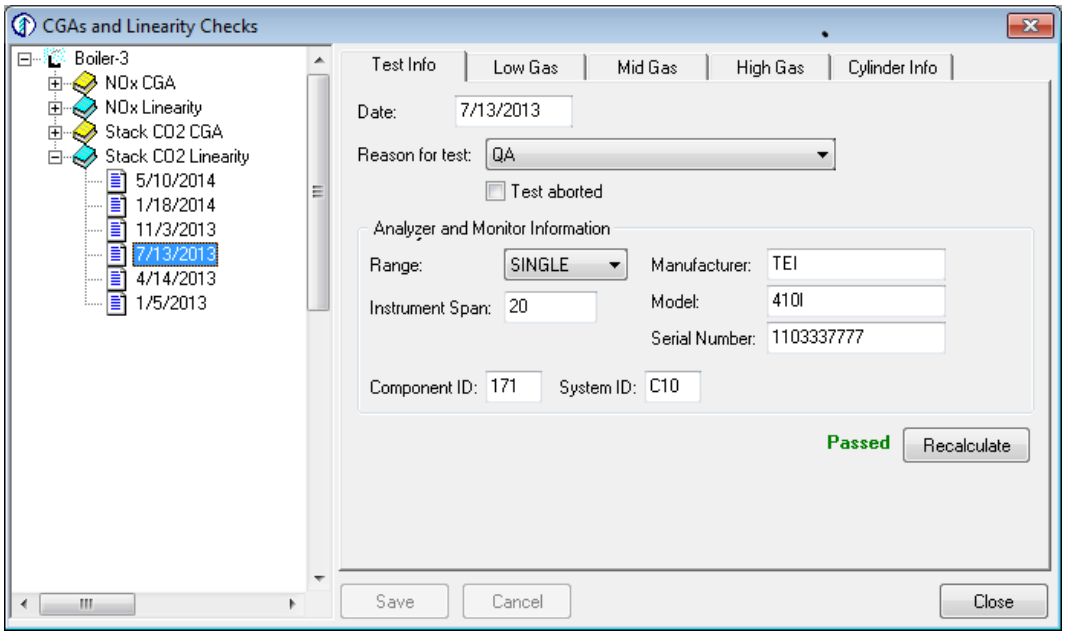
Click the (+) to expand one kind of CGA or linearity check and view the individual tests.



Click the date of a test to select that test. The test data appears on the right side of the window.

Test Info

The Test Info tab includes basic data about the test and the analyzer.



"Passed" appears if the results are within the required tolerances for all gas levels. "Failed" appears in red if the results failed for any gas level. "Cylinder Expired" appears if any cylinder expiration date is prior to the test date.

The Component ID and System ID are defined in the monitor plan for a Part 75 source. The Component ID and System ID are not required for non-Part 75 sources.

Note

Cedar automatically fills in the analyzer information when the CGA or linearity check is created if the analyzer information has been provided in the Analyzer Information window in the Data Editor.

Aborted Linearity Check

Part 75 generally requires that incomplete or aborted linearity checks are considered as though they failed, and must be reported in the quarterly electronic submittal to USEPA. Check the "Test aborted" box to mark the test as aborted.

The exception is linearity checks that are aborted for reasons other than the performance of the CEMS (for example, a power outage or a closed gas cylinder valve). Such linearity checks are not considered aborted tests and should not be reported to USEPA. You may want to delete such a linearity check to avoid confusion.

Abbreviated Linearity Check

Part 75 allows an "abbreviated linearity check" following certain CEMS maintenance procedures. An abbreviated linearity check consists of one injection of each reference gas, instead of the full set of three injections of each reference gas.

If the CEMS passes the abbreviated linearity check, the data is valid. Abbreviated linearity checks are never reported to USEPA in the quarterly electronic reports, although the facility must maintain a record of them. Select the "Abbreviated Linearity" reason to prevent the linearity check from being included in the quarterly electronic submittal to USEPA.

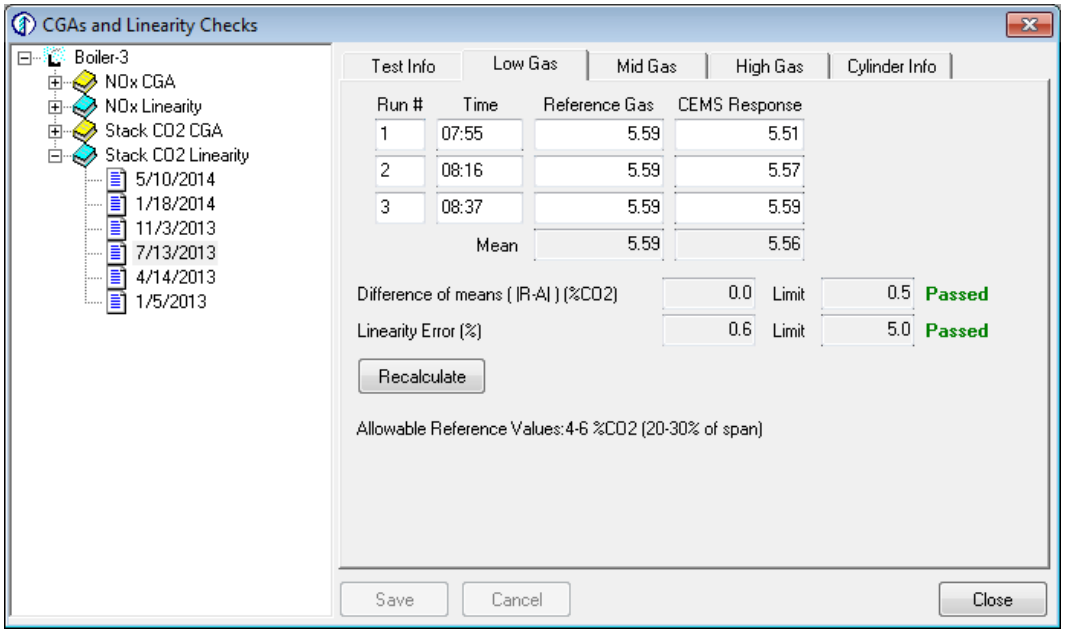
If the CEMS fails the abbreviated linearity check, the CEMS is out-of-control and the data is invalid. The failed test must be reported to USEPA as an aborted linearity check. Select a test reason ("Diagnostic" is recommended) and mark the test as aborted.

Offline Linearity Check

Part 75 requires that linearity checks must be performed when the unit is operating. If a linearity check is performed when the unit is not operating, select the "Unit Offline" reason to prevent the linearity check from being included in the quarterly electronic submittal to USEPA.

Low Gas, Mid Gas, High Gas

The gas tabs contain the gas injection data. The High Gas tab usually does not apply to CGAs.



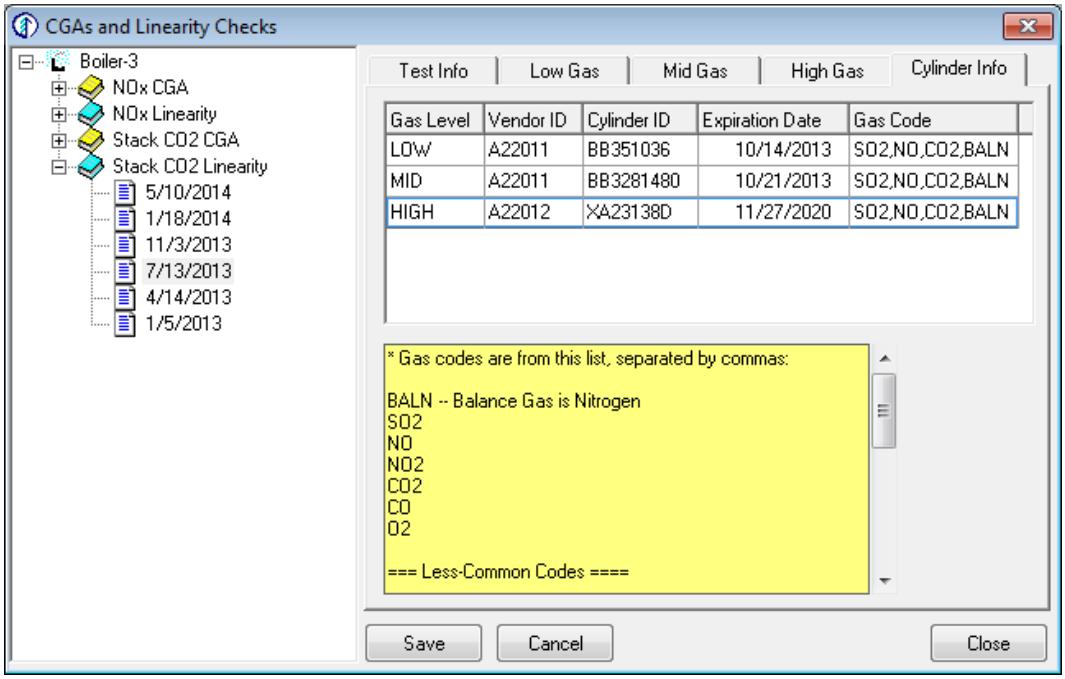
If the reference values or response values are changed, click Recalculate to update the results.

"Passed" appears next to the limit if one or both results are within the required tolerances. "Failed" appears in red if neither result is within the required tolerances.

The window also calculates and displays the range of allowable reference gas values. The text appears red if any reference values are outside the allowable range.

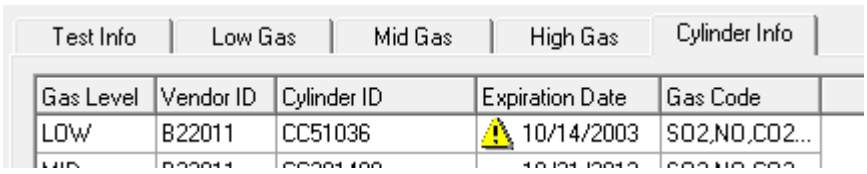
Cylinder Info

The Cylinder Info tab includes data about the reference gas cylinders. The cylinder information comes from the data sheet or cylinder tag provided by the gas vendor.



Cylinder information is required for linearity checks that are reported to USEPA under Part 75. Cylinder information may be optional for CGAs. Cylinder information may be optional for linearity checks for non-Part 75 sources.

If the cylinder expiration date is prior to the test date, a warning icon appears. "Cylinder Expired" appears in red on the Test Info tab and the Low, Mid, or High Gas tab.



Save changes

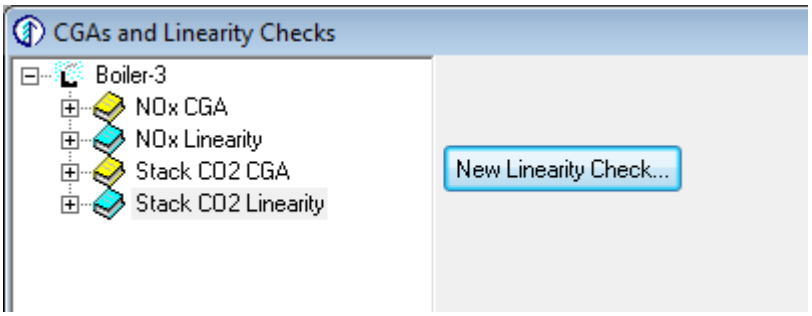
Click the Save button to save any changes you have made. Or click Cancel to discard the changes.

Manually add a CGA or Linearity Check

For many CEMS, a user pushes a button to initiate a CGA or linearity check and the CEMS automatically injects the reference gases. Cedar then acquires the gas injection data from the CEMS. This is the easiest and most common way that Cedar acquires CGA and linearity check data.

If Cedar cannot automatically acquire the CGA or linearity check data, you can manually add a new check.

Click the *book* icon for the kind of CGA or linearity check that you need to create. Then click the New CGA or New Linearity Check button.



A window allows you to select the date of the new CGA or linearity check. Then Cedar creates the new check and you can enter the data.

Delete a CGA or Linearity Check

To delete an unneeded CGA or linearity check, select the test date in the tree and press the Del (Delete) key. A message box asks you to confirm that you want to delete the test.

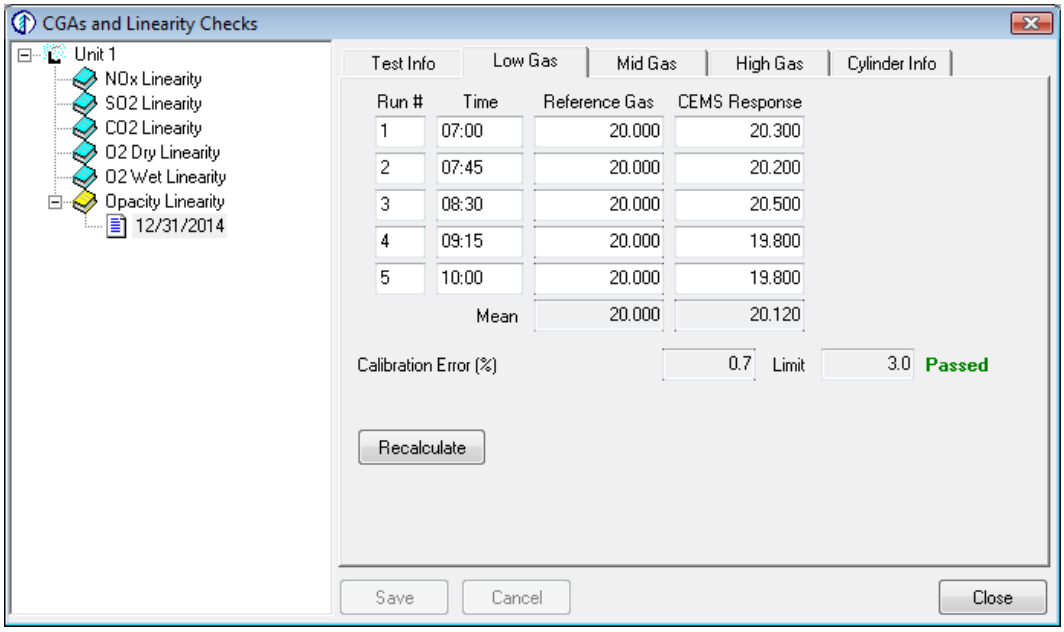
Warning

Use caution when deleting a CGA or linearity check. Environmental regulations (including 40 CFR 75) require that all CGAs or linearity checks that affect data validity must be reported.

Edit Opacity Calibration Error Tests

Calibration Error Tests for opacity monitors are similar to linearity checks.

Calibration error tests for opacity monitors are specified in 40 CFR 60 Appendix B Performance Specification 1. The test may have 3, 4, or 5 runs for each of 3 reference filters, for a total of 9, 12, or 15 runs.



Cylinder information does not apply to Opacity Calibration Error Tests.

Edit CGTs and Calibration Drift Tests (Canada)

Cylinder Gas Tests (CGTs) and Calibration Drift Tests are similar to linearity checks.

Quarterly CGTs

For a Cylinder Gas Test (CGT), the test reason must be "QA".

Environment Canada regulations require CGTs to be performed each quarter. CGTs are specified in Report EPS 1/RG/7 Revised, section 6.3.1.

Calibration Drift Test for CEMS certification

For a Calibration Drift Test, the test reason must be "Certification". The "Certification" test reason indicates the test is a Calibration Drift Test, and Cedar will use the appropriate equations and pass/fail criteria. (CGTs and Calibration Drift Tests use different equations and pass/fail criteria.)

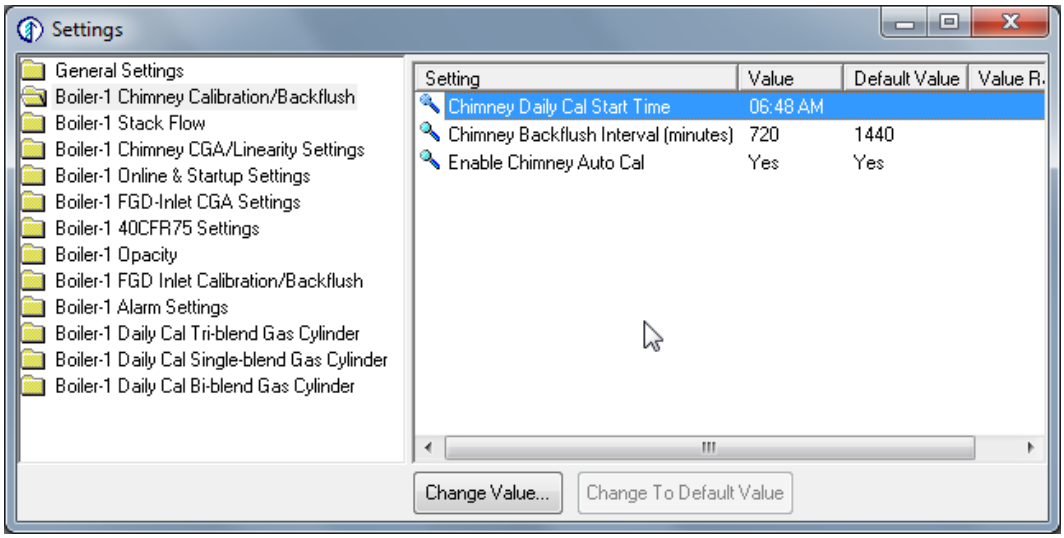
Environment Canada regulations require daily Calibration Drift Tests during the 168-hour Operational Test Period for CEMS certification. A Calibration Drift Test involves 3 injections of 3 gases, for a total of 9 injections. Calibration Drift Tests are specified in Report EPS 1/RG/7 Revised, section 5.3.2.

Data Editor Settings

Settings are values that are specific to your facility. Settings include, but are not limited to, daily calibration start times for each sample train, fuel density settings for gas and/or oil, bias factor settings, on-line setpoints for fuel, water, and steam flows, and backflush intervals.

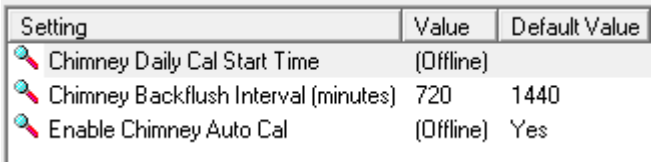
Settings Window

In the Data Editor menu, click Edit/View Data > Settings. The Settings window opens.



Settings are organized into groups in the left side of the window. The settings and their associated values are listed in the right side of the window.

Settings with a red magnifying glass icon cannot be changed. A lock near the icon indicates that the setting is locked. This can occur if the setting is password protected, or if the Settings screen is offline. If Cedar is unable to communicate with the CEMS, the value reads "Offline".



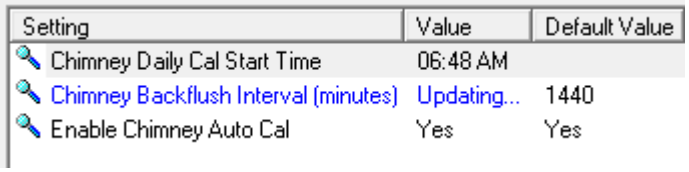
Changing a Setting

To change a setting, select the setting group on the left side of the screen, and then select the setting in the list on the right side of the screen.

If there is a default value and you want to change the setting to this default value, click Change to Default.

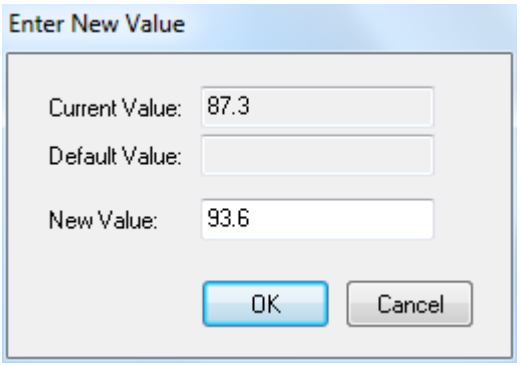
To enter a new value, click Change Value, or double-click on the setting in the list.

After you enter a new value, the list displays "Updating" until the new value has been saved.



Changing a Numeric Setting

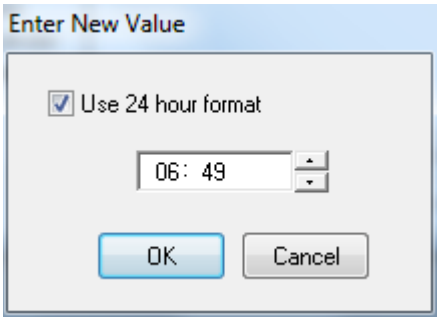
If the setting is a numeric value, the following window appears:



Enter the new value and click OK.

Changing a Time Setting

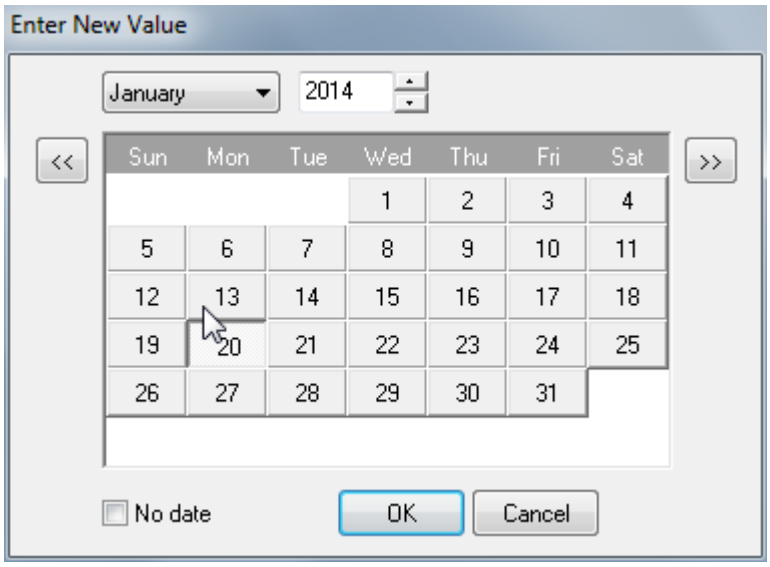
If you are changing a time value, the following window appears:



Check the Use 24-Hour Format box if you prefer to enter the time in 24-hour format instead of 12-hour format. Enter the new time and click OK.

Changing a Date Setting

If you are changing a date value, the following window appears:

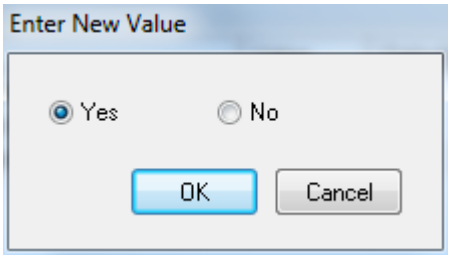


Check the "No date" box if the setting should not have any date at all.

Enter the new time and click OK.

Changing a Yes/No or True/False Setting

If you are changing a Yes/No or On/Off value and the current value is Null, the following window appears.



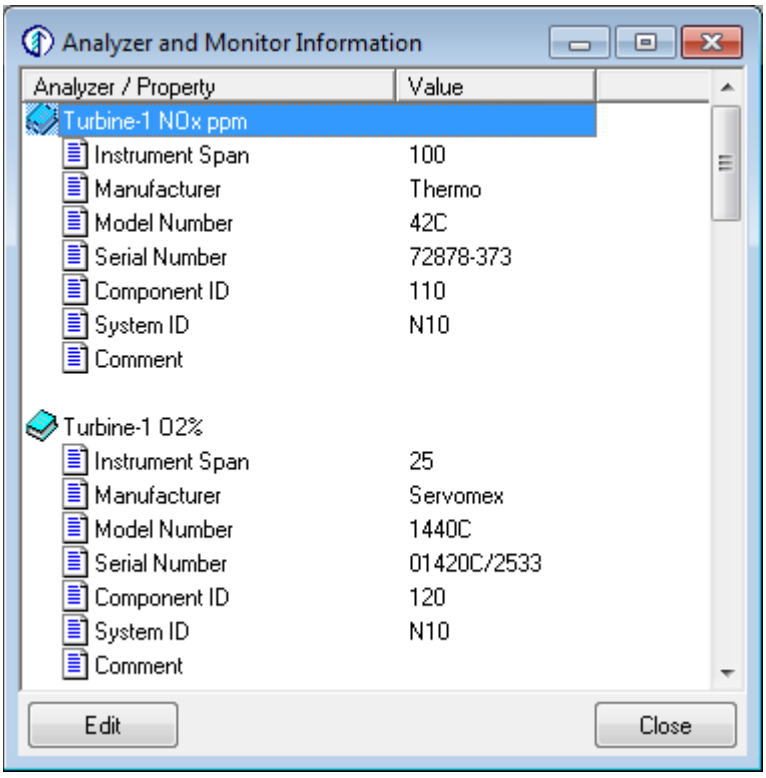
Select the appropriate option and click OK.

If the current value is already Yes, No, True, or False, then the value will simply toggle when you click Change Value.

Analyzer Information

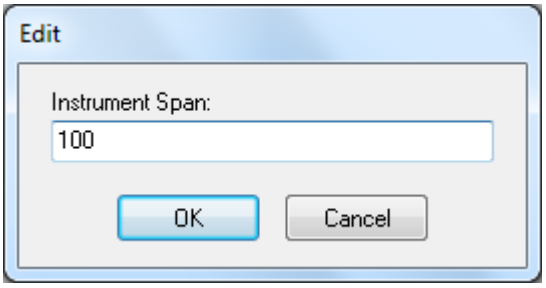
Calibration checks, CGAs, and linearity checks require additional information about the analyzer.

In the Data Editor menu, click Edit/View Data > Analyzer Information. The Analyzer Information window opens.



The window contains information records for every analyzer in the system. Analyzers with two ranges (dual-range analyzers) appear twice in the list.

Click an item to select it. Click the Edit button to change the value.



Enter the new value and click OK.

Data Editor Database Utilities Menu

This menu starts the Cedar Backup application and the Cedar Database Utility.

Backup/Restore Data

Opens the Cedar Backup application to backup data from the Cedar database, or restore data to the Cedar database.

Extract Data From Database

Opens the Cedar Database Utility to extract (copy) data from the Cedar database to a compressed file for a time range.

Extract Data From Database (One Quarter)

Opens the Cedar Database Utility to extract (copy) data from the Cedar database to a compressed file for a calendar quarter.

Merge Data Into Database

Opens the Cedar Database Utility to merge previously extracted data into the Cedar database from a compressed file.

Purge Old Data

Opens the Cedar Database Utility to purge (delete) old data from the Cedar databases.

CiSCO Menu

This menu provides access to features that are not commonly used, and tools that provide diagnostic information for CiSCO software support personnel.

Enable this menu

Most of this menu is disabled until this menu item is clicked. If advanced Cedar security is enabled, then privilege level 3 is required to enable this menu.

Change last backup date

See the Daily Auto Backup section for an explanation of this item.

Retrieve manual historical data

For some facilities, Cedar is configured to acquire data from an external database or historian system. This tool can be used to force Cedar to retrieve data from the external source again.

7-day drift evaluation

See the 7-Day Calibration Error Test section for an explanation of this item.

7-Day Calibration Error Test

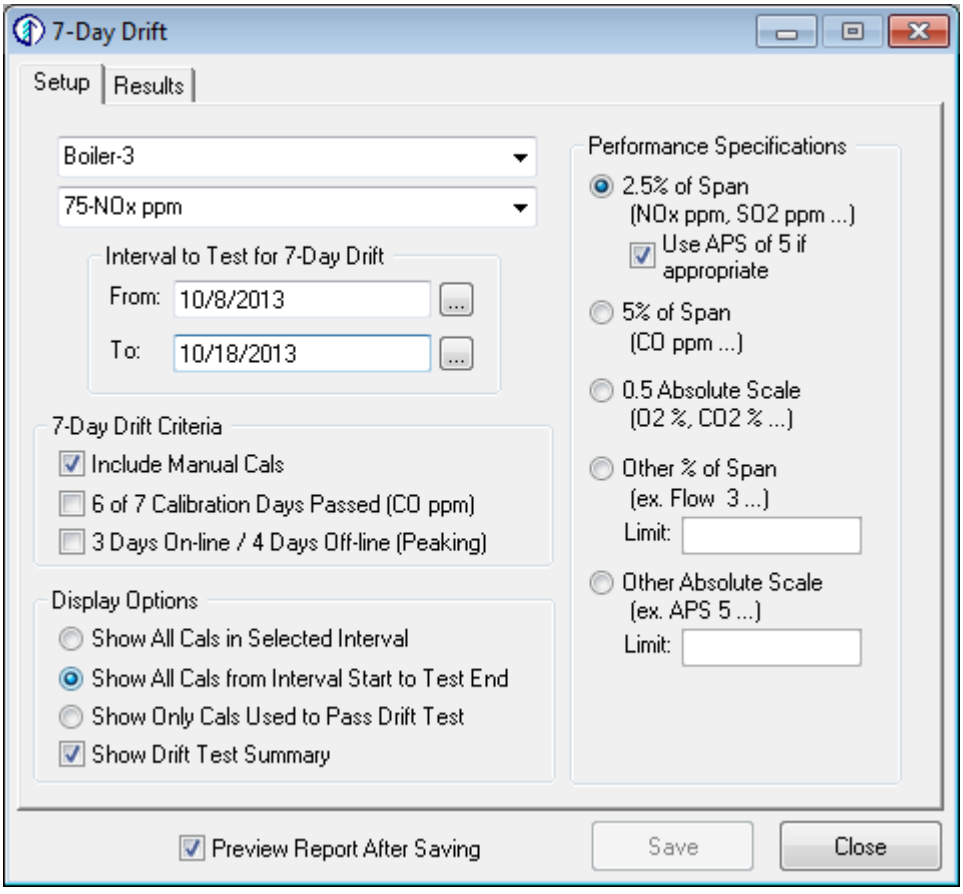
A 7-day calibration error test, also called a 7-day drift test, is typically required when a CEMS is certified or recertified. The test consists of calibration checks conducted over 7 consecutive operating days. Cedar has a tool to easily find daily calibration checks to pass the 7-day test. This tool is not commonly used, so it is in the CiSCO menu.

While this tool provides significant assistance for finding and reporting a 7-day drift tests, a full discussion of these tests is outside the scope of this manual.

In the Data Editor menu, click CiSCO > 7-Day Drift Evaluation. The window may take a minute to appear while it loads the Cedar configuration. The 7-Day Drift window opens.

Setup

The Setup tab is initially selected.



Date Interval

Enter the date range that Cedar should search for calibration checks. Cedar will only examine calibration checks in the specified date range.

Include Manual Cals

When this option is selected, calibration checks that are marked as manually initiated are included in the search. This option is selected by default.

6 of 7 Calibration Days Passed (CO ppm)

Most regulations require the CEMS to pass all calibration checks in the 7-day period. Some regulations allow one failed calibration check in the 7-day period for a CO CEMS. By default, this option is not selected.

3 Days Online, 4 Days Offline (Peaking)

Typically, all calibration checks in the 7-day test must be performed while the unit is operating. Part 75 allows a 7-day test for a peaking unit to include up to 4 calibration checks on days when the unit was not operating. The unit must meet the Part 75 definition of a "peaking unit". By default, this option is not selected.

Performance Specification

A CEMS passes a typical daily calibration check if the drift does not exceed two times the performance specification (there are exceptions). However, to pass a 7-day calibration error test, the daily calibration drift must not exceed the performance specification.

Select the performance specification that is appropriate for the analyzer.

- **2.5% of Span** is typically used for NOx and SO2.
    - Check the "**Use APS of 5 if appropriate**" box to allow use of the Alternate Performance Specification (APS). The APS is typically allowed for Part 75 CEMS, but not for other CEMS. When this box is checked, a CEMS passes a calibration check when the drift does not exceed 2.5% of span or 5 ppm, whichever is less restrictive.
- **5% of Span** is typically used for CO.
- **0.5 Absolute Scale** is typically used for O2 and CO2. Calibration drift may not exceed 0.5 % O2 or 0.5 % CO2.
- **Other % of Span** is used for other CEMS. For example, a flow monitor typically uses 3 % of span.
- **Other Absolute Scale** may be used for cases which are not covered by the other options.

Show All Cals in Selected Interval

When this option is selected, all calibration checks in the date range are displayed in the results. This includes calibration checks that occurred before or after the 7-day test. This also includes offline calibration checks that occurred during the 7-day test.

Show All Cals from Interval Start to Test End

When this option is selected, all calibration checks that occurred prior to and during the 7-day test are displayed in the results. This includes offline calibration checks that occurred during the 7-day test.

Show Only Cals Used to Pass Drift Test

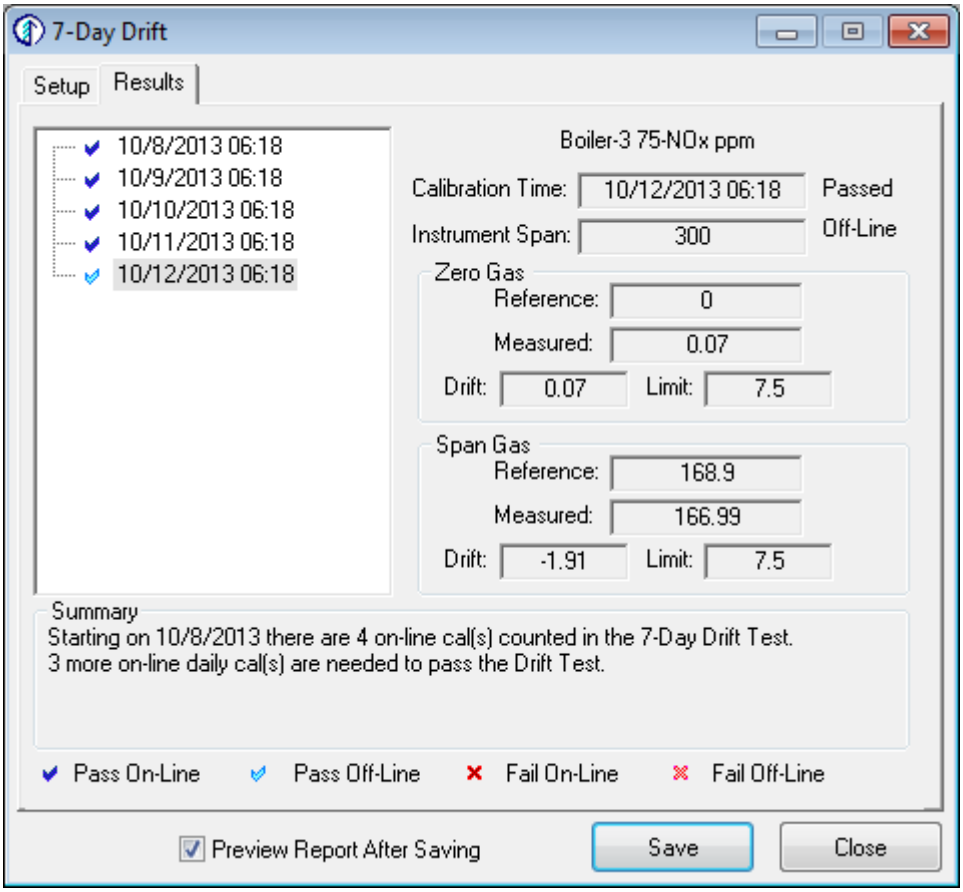
When this option is selected, only calibration checks that were necessary to pass the 7-day test are displayed in the results.

Show Drift Test Summary

When this option is selected, the results include an explanation of whether the 7-day test was passed, or what additional calibration checks are needed to pass the 7-day test.

Results

Select the Results tab, and the tool searches for calibration checks and displays the results.

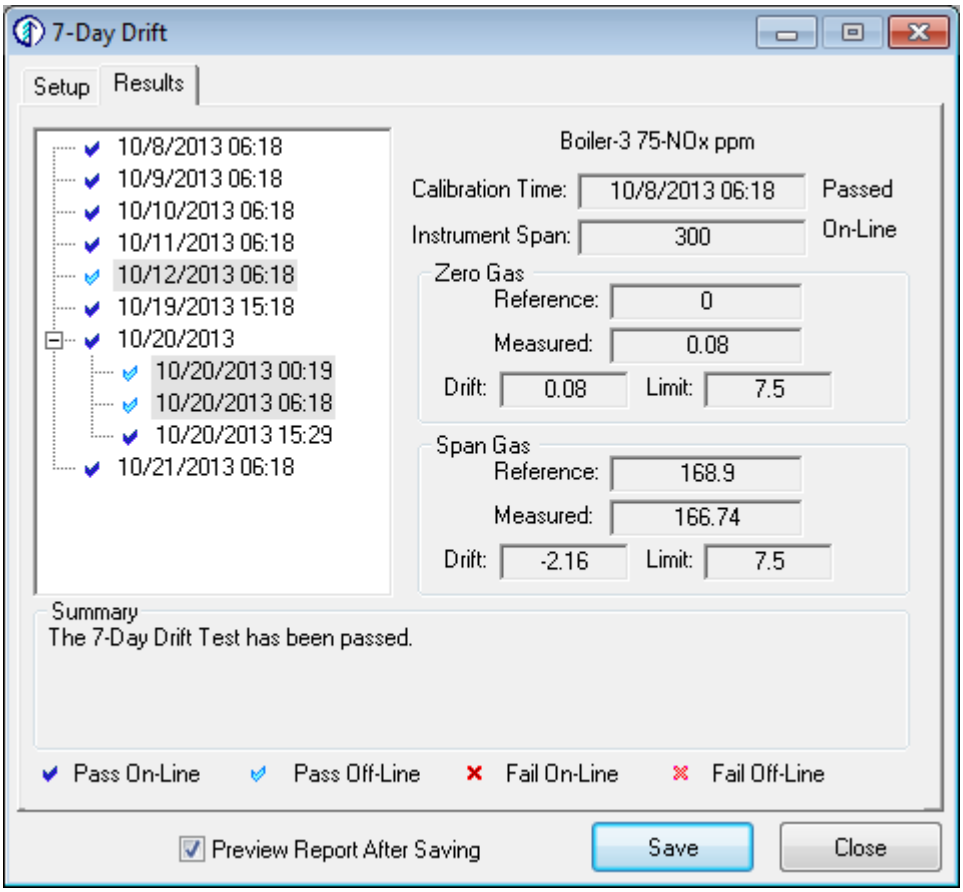


The selected calibration checks appear in the list. The icon next to each calibration check indicates the pass/fail result and online/offline status. The date and time for offline calibration checks has a gray background.

Click on a the date and time of a calibration check to see the data in the fields next to the list.

The Summary box indicates whether the CEMS passed the 7-day calibration error test based on the calibration checks in the date range.

If necessary, select the Setup tab, modify the date range or other options, and then select the Results tab again. The results are updated to reflect the new selections.



Save Results

The Save button is only enabled when the Results tab is selected. Click Save to save the results to a PDF file. If the Preview Report After Saving box is checked, the report will open in a PDF reader.

Demo Facility
7-Day Drift Test
Boiler-3 75-NOx ppm

Time	Instrument Span	Zero Reference	Zero Measured	Zero Drift	Zero Drift Limit	Span Reference	Span Measured	Span Drift	Span Drift Limit	Status
10/8/2013 06:18	300	0.00	0.08	0.08	7.50	168.90	166.74	-2.16	7.50	On-Line
10/9/2013 06:18	300	0.00	0.11	0.11	7.50	168.90	166.16	-2.74	7.50	On-Line
10/10/2013 06:18	300	0.00	0.07	0.07	7.50	168.90	166.88	-2.02	7.50	On-Line
10/11/2013 06:18	300	0.00	0.07	0.07	7.50	168.90	166.12	-2.78	7.50	On-Line
10/12/2013 06:18	300	0.00	0.07	0.07	7.50	168.90	166.99	-1.91	7.50	Off-Line
10/19/2013 15:18	300	0.00	-0.26	-0.26	7.50	168.90	168.35	-0.55	7.50	On-Line
10/20/2013 00:19	300	0.00	0.05	0.05	7.50	168.90	169.98	1.08	7.50	Off-Line
10/20/2013 06:18	300	0.00	0.07	0.07	7.50	168.90	170.08	1.18	7.50	Off-Line
10/20/2013 15:29	300	0.00	0.05	0.05	7.50	168.90	170.98	2.08	7.50	On-Line
10/21/2013 06:18	300	0.00	0.04	0.04	7.50	168.90	171.18	2.28	7.50	On-Line

The 7-Day Drift Test has been passed.

Offline calibration checks have a gray background in the report.

The options on the Setup tab affect how many calibration checks are included in the report, and whether the test summary appears at the bottom of the report.

Chapter 5: Database Backup & Utility

Cedar has a Backup application to make backup copies of data and to restore data to the Cedar databases. Cedar also has a Database Utility application that provides other options to get selected data from and into the Cedar databases.

Cedar Backup Application

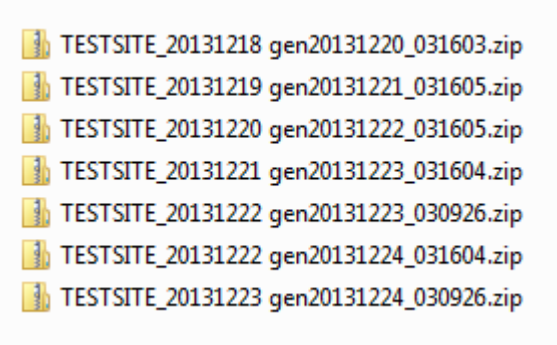
The Cedar Backup application makes backup copies of the data in the Cedar databases.

Cedar performs an automatic backup every night. You can also:

- Backup data manually.
- Restore data into the Cedar database.
- Restore the Cedar configuration.

Backup files

Each backup file is compressed and contains the data and configuration for one day. The filenames use the Cedar site ID, the date that the data is for, and the date and time that the backup file was generated. Here is an example of a folder with backup files.



Cedar Database Utility

The Database Utility allows you to perform these operations on the Cedar databases.

- **Extract** (copy) data from the Cedar databases to a compressed file.
- **Merge** extracted data into the Cedar databases.
- **Purge** old data from the Cedar databases.

Extract and merge allow you to copy data from one SQL Server instance to another.

Purge allows you to permanently delete old data from the databases.

Database Tables

The restore, extract, merge, and purge operations only affect the tables the user selects. This section describes the type of data that is stored in each table.

Constants

The Constants table stores constants and similar data that has a constant value for a defined period of time.

DataPoints (Long Term)

The long term DataPoints table stores data points that must be retained for a long period of time (several years). This typically includes 1-hour averages, longer averages, and 3-minute and 6-minute opacity.

QADaily

The QADaily table stores data for daily QA checks, such as calibration checks.

QATests

The QATests table stores data for QA tests that are performed on a less frequent basis. This includes CGAs and linearity checks.

DataPoints (Short Term)

This table stores data that does not have to be retained for a long period of time. This typically includes 1-minute averages.

IOAuditData

The IOAuditData table stores data for I/O audits. For more information, see the sections on starting and stopping I/O audits and generating reports for I/O audit data.

ConfigData

The ConfigData table stores facility-specific configuration data.

UserConfigData

The UserConfigData table stores user settings.

Alarms

The Alarms table stores alarm data.

Realtime

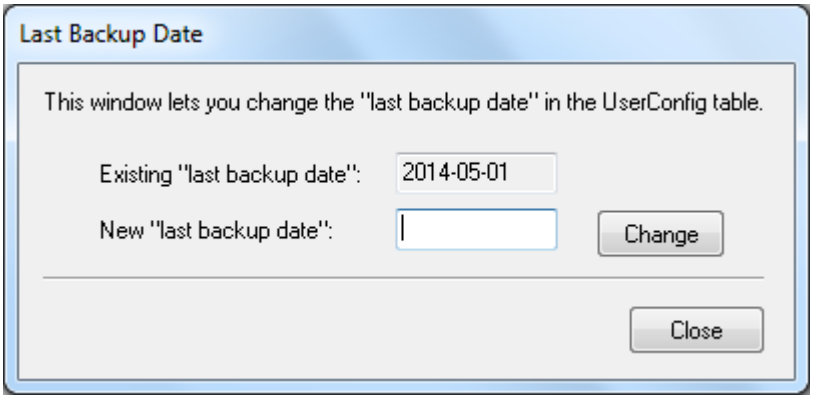
The Realtime tables store current data and history. Realtime data can be purged.

Daily Automatic Backup

Cedar performs an automatic backup every night at approximately 3:00 AM. Cedar backs up the data for the previous day.

Cedar also backs up days for which data has been edited or modified. If many days have been modified, the backup operation may take a long time.

Sometimes automatic backup can not be performed because, for example, the external backup device is full or disconnected. Cedar stores the most recent date for which data was successfully backed up. When the backup location is available again, Cedar will back up all days since the date of the most recent successful backup. The date of the most recent successful automatic backup is available from the Data Editor menu. Select CiSCO > Change Last Backup Date.



Configure automatic backup location(s)

The location for the automatic backup files is specified in the Cedar5.ini file. The `BackupDir` entry specifies the path for the backup files.

Cedar can copy backup files to multiple locations. This can be useful to backup to both a local location and to a network server. In the `BackupDir` entry, separate multiple locations with a semicolon. Here is an example of the `BackupDir` entry with multiple locations:

```
BackupDir=F:\Backup;C:\Cedar\NetworkBackup
```

Warning

Do not use the root folder of a FAT-formatted drive for a backup location. Some USB stick drives are factory formatted as FAT.

Due to limitations of the FAT file system, the root folder can hold a limited number of files. If the root folder contains the maximum number of files, no more files can be created in the root folder, even if the drive has a large amount of free space.

Other file systems, such as NTFS and FAT32 do not have this limitation.

To determine the file system of a drive, right-click on the drive in

Windows Explorer and click Properties. The Properties window displays the file system used for the drive.

Secondary backup location

In addition to the backup location(s) specified in the Cedar5.ini file, Cedar also writes backup files to the SecondaryBackup folder in the Cedar folder. This path is typically C:\Cedar\SecondaryBackup. The path will be different if the Cedar5.ini file specifies a different path for the Cedar folder.

Alarm for low free space in backup location(s)

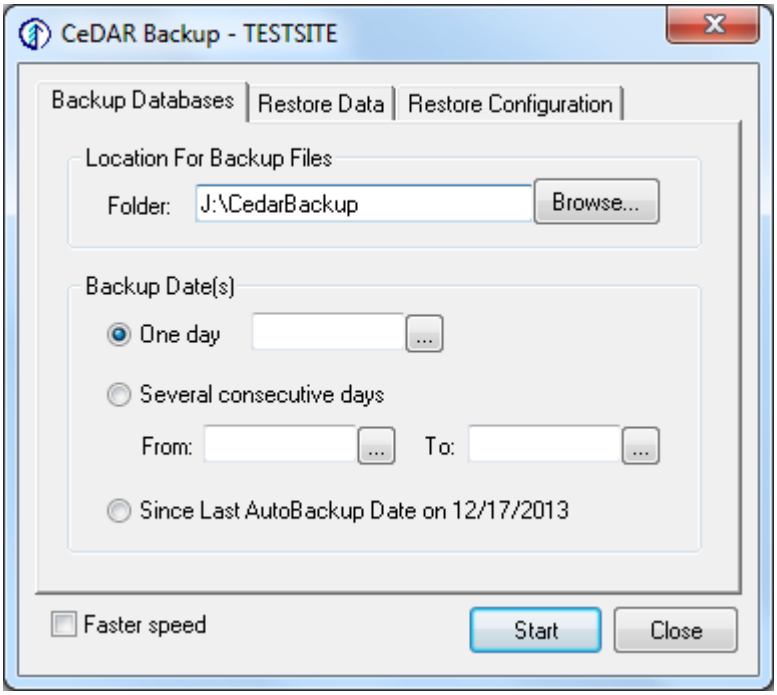
Cedar creates an alarm if an automatic primary backup location is getting low on available space. The daily automatic backup operation creates the alarm if the free space is less than 10% of the total drive space.

Disable auto backup

For auto backup to run, the "Do NOT perform auto database backup everyday" box must be unchecked in the Data Monitor Options window.

Backup Databases

The Cedar Backup application allows you to backup data to the location of your choice.



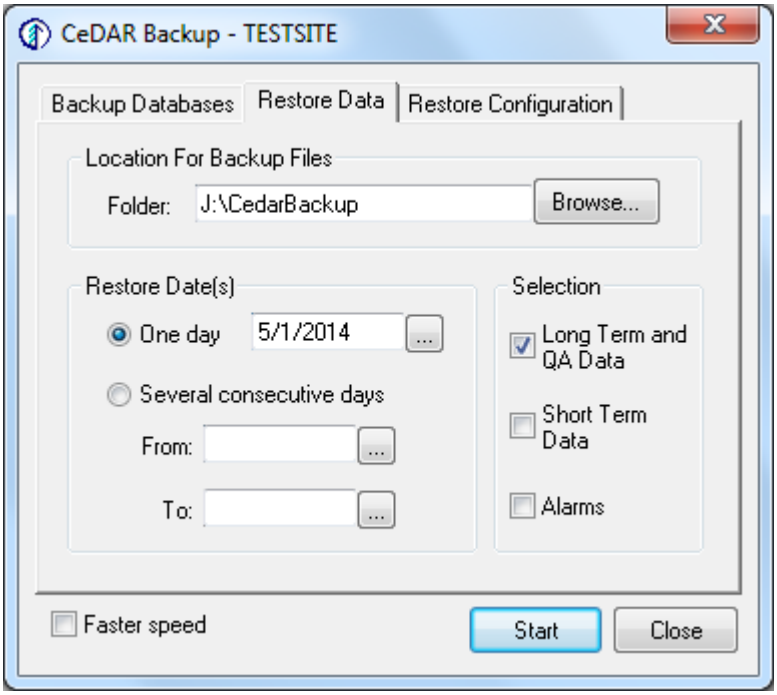
To backup data:

- Select the folder where the backup files will be created. The default location is specified in the Cedar5.ini file.
- Select the day(s) to backup.
- Check the Faster Speed box to allow the backup operation to complete as quickly as possible. In some cases, backing up many days of data may interfere with the Cedar Data Recorder and prevent it from recording data while the backup operation is in progress.
- Click the Start button.

A window displays the status of the backup operation. A message box appears when the operation is complete.

Restore Data

The Cedar Backup application allows you to restore data from Cedar backup files into the Cedar databases.



To restore data:

- Select the folder for the backup files. The default location is specified in the Cedar5.ini file. If the folder contains multiple backup files for the same day, Cedar will use the latest file.

  Note

  Do not unzip the backup files. The restore operation will unzip the files to get the necessary data.

- Select the day(s) to backup.
- Select the data to be restored. For help choosing the tables, see the section that describes the data that is stored in each table.
- Check the Faster Speed box to allow the restore operation to complete as quickly as possible. In some cases, restoring many days of data may interfere with the Cedar Data Recorder and prevent it from recording data while the restore operation is in progress.
- Click the Start button.

Warning

Existing data for the selected day(s) will be deleted and replaced with data from the backup file.

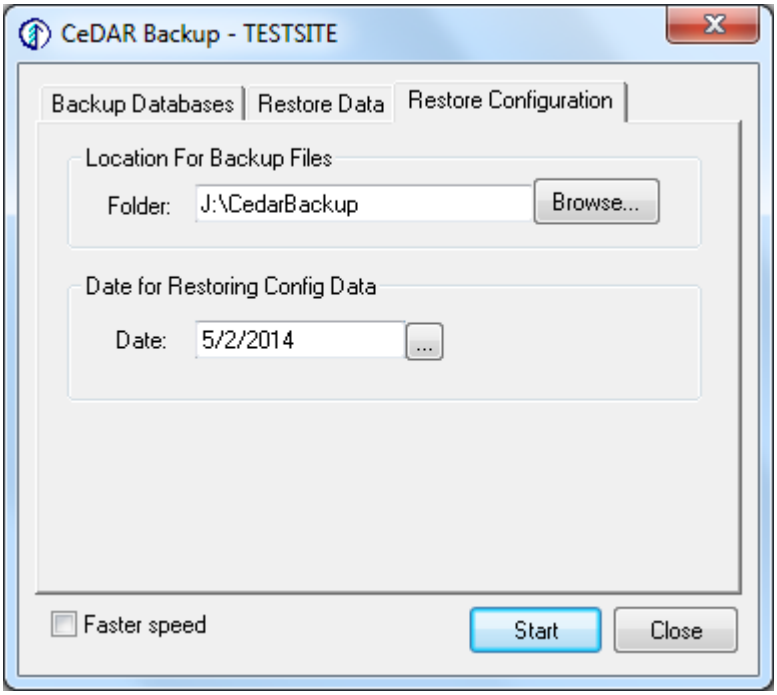
A window displays the status of the restore operation. A message box appears when the operation is complete.

Security and permissions

A restore operation will fail if the user does not have permissions. The user must have the CedarBackupRestore, CedarDataReader, and CedarDataWriter database roles in basic Cedar security. Alternatively, the user may have administrator or database owner permissions for the Cedar databases.

Restore Configuration

The Cedar Backup application allows you to restore the Cedar configuration that was in use on a specific date.



Warning

Restoring the Cedar configuration will completely replace the existing configuration. This is only recommended after contacting CiSCO software support.

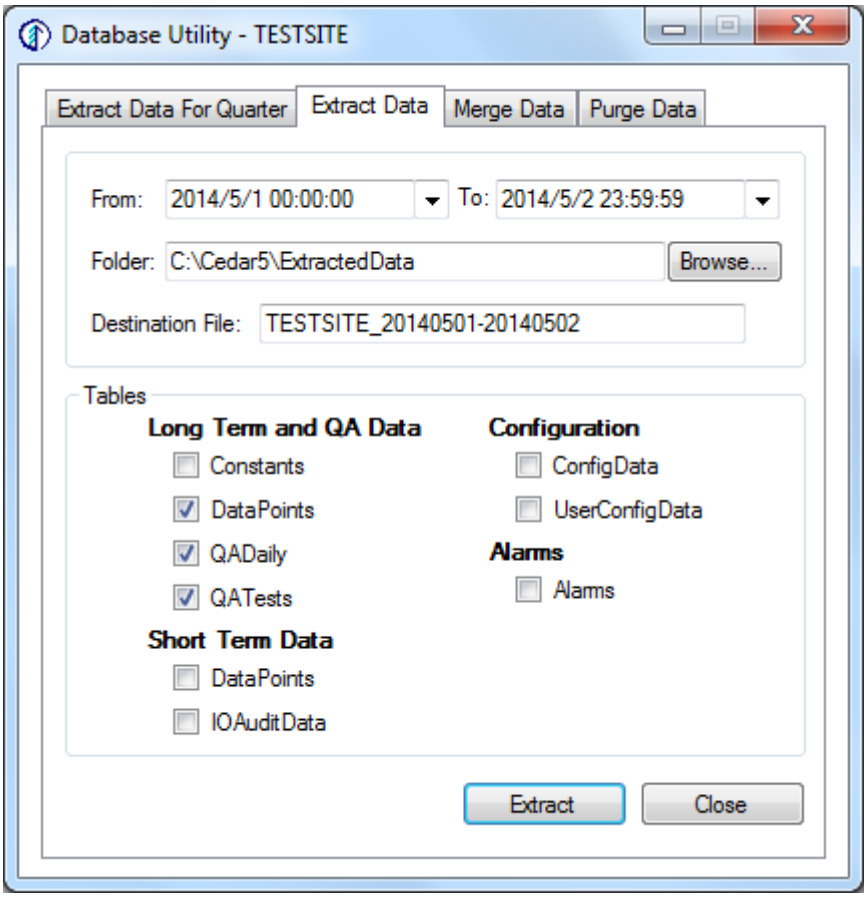
Security and permissions

A restore operation will fail if the user does not have permissions. The user must have the CedarBackupRestore, CedarDataReader, and CedarDataWriter database roles in basic Cedar security. Alternatively, the user may have administrator or database owner permissions for the Cedar databases.

Extract Data

The Cedar Database Utility allows you to extract (copy) data from the Cedar database to a compressed file. Data extraction is useful for transferring data from one SQL Server instance to another.

The selected data is copied from the Cedar database to a compressed file. The extract operation only copies data; it does not alter data or delete data from the database.



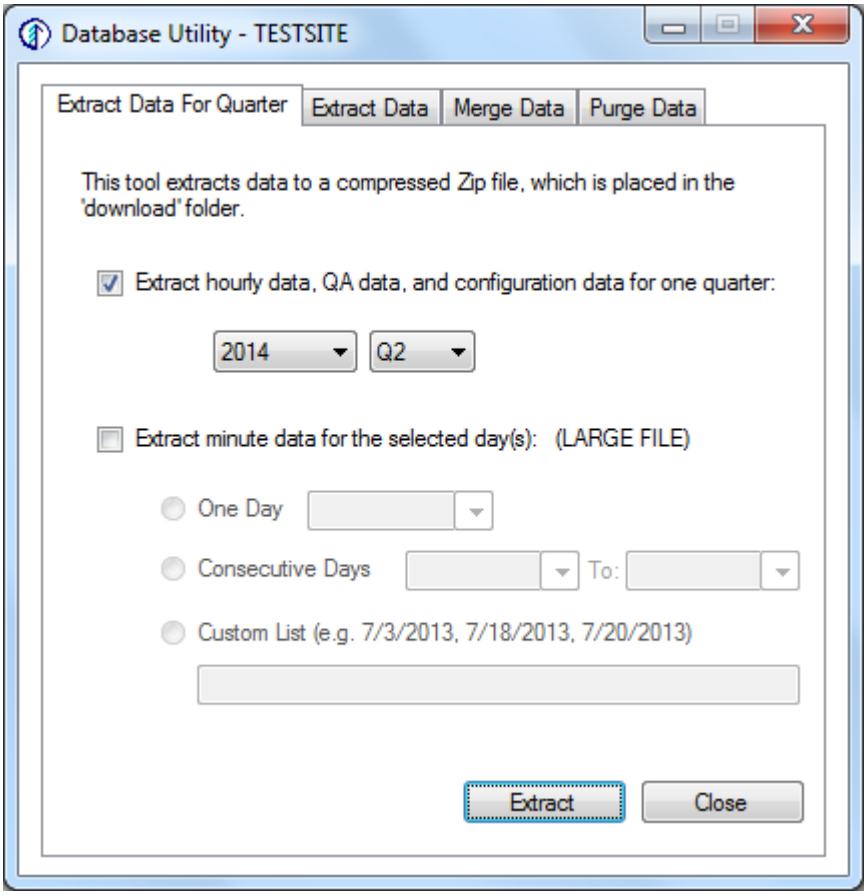
To extract data from the Cedar database to a compressed file:

- Enter the From and To dates.
- Select the folder where the compressed file will be created.
- The Destination File box indicates the name of the file. The Database Utility provides a default file name. You can enter a different file name.
- Select the tables to extract data from. For help choosing the tables, see the section that describes the data that is stored in each table.
- Click the Extract button.

A window displays the status of the extract operation. A message box appears when the operation is complete.

Extract Data For Quarter

A common use of data extraction is to copy a quarter of data from the DAS to another computer where the quarterly Part 75 electronic report is prepared. The "Extract Data For Quarter" tab in the Cedar Database Utility simplifies this common extraction scenario.



To extract data for a quarter from the Cedar database to a compressed file:

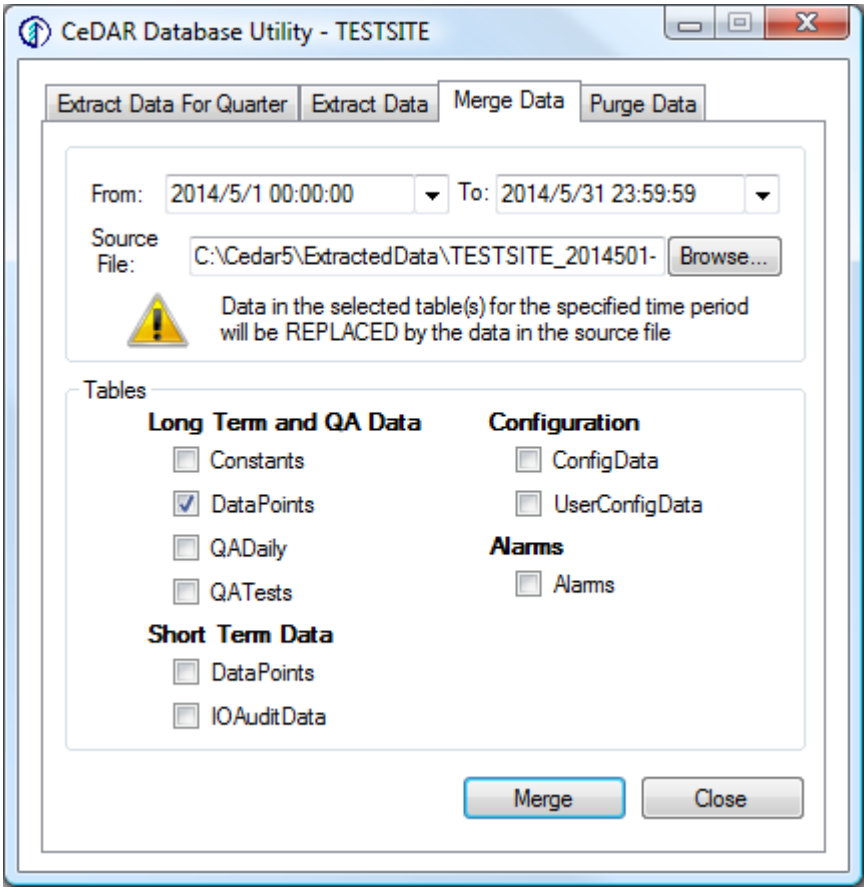
- Check the "extract minute data..." box to extract a copy of the hourly data, daily QA checks, other QA checks, and configuration data for an entire quarter.
- Check the "extract minute data" box to extract 1-minute data for a selected day or days. Typically, 1-minute data is only needed for quarters with a RATA. If a RATA was performed during the quarter, select the day(s) when the RATA was run. This option generates a separate zip file for the 1-minute data. The resulting file can be very large, even with compression. If one file is too large, you can perform the extraction several times with shorter time periods to create multiple smaller files.
- Click the Extract button.

A window displays the status of the extract operation. A message box appears when the operation is complete.

The compressed file with the extracted data is placed in a the "ExtractForDownload" folder. This folder is typically C:\Cedar5\ExtractForDownload. The actual folder is determined by the Cedar5.ini file.

Merge Data

The Cedar Database Utility allows you to take data that was previously extracted from Cedar databases and import it into Cedar databases.



To merge extracted data into the Cedar databases:

- Enter the From and To dates.
- Select the zip file that contains the extracted data.

Warning

Do not enter a time range that is larger than the data in the source file. Existing data will be deleted and not replaced.

Note

Do not unzip the extracted files. The merge operation will unzip the files to get the necessary data.

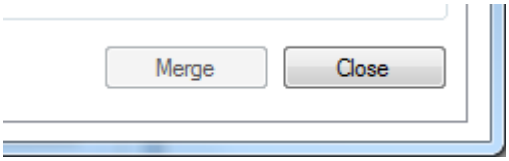
- Select the tables that will receive the imported data. For help choosing the tables, see the section that describes the data that is stored in each table.

- Click the Merge button. If the button is disabled, see below.

A window displays the status of the merge operation. A message box appears when the operation is complete.

Merge button disabled

The Merge button is disabled by default.



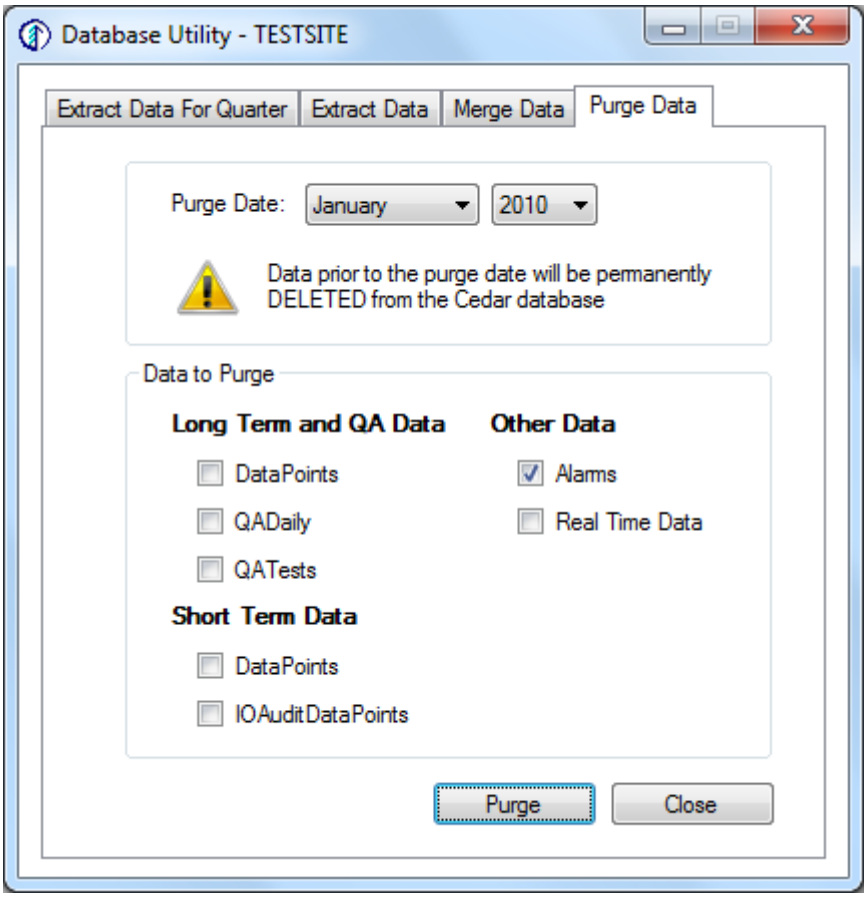
To enable the Merge button, start the Cedar Data Editor. From the menu, select Database Utilities > Merge Data Into Database.

Security and permissions

A merge operation will fail if the user does not have permissions. The user must have the CedarBackupRestore, CedarDataReader, and CedarDataWriter database roles in basic Cedar security. Alternatively, the user may have administrator or database owner permissions for the Cedar databases.

Purge Data

The Cedar Database Utility allows you to purge (delete) old data from the Cedar databases.



To purge old data from Cedar databases:

- Select the month and year. Data prior to the selected month will be deleted.

  Warning

  All data prior to the purge date in the selected table(s) will be deleted. Make sure you have backup files for data prior to the purge date.

- Select the tables to purge. For help choosing the tables, see the section that describes the data that is stored in each table.
- Check your selections carefully before clicking the Purge button.

Caution

Check the purge date carefully before clicking the Purge button.

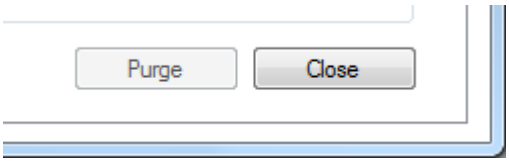
Check the table selection carefully before clicking the Purge button.

- Click the Purge button. If the button is disabled, see below.

A window displays the status of the purge operation. A message box appears when the operation is complete.

Purge button disabled

The Purge button is disabled by default.



To enable the Purge button, start the Cedar Data Editor. From the menu, select Database Utilities > Purge Old Data.

Security and permissions

A purge operation will fail if the user does not have permissions. The user must have the CedarBackupRestore, CedarDataReader, and CedarDataWriter database roles in basic Cedar security. Alternatively, the user may have administrator or database owner permissions for the Cedar databases.

Chapter 6: Cedar Security

Overview

Cedar security has two parts: basic and advanced.

Basic Cedar security determines a user's permissions for the Cedar database. Basic security is configured in SQL Server. Most importantly, basic Cedar security determines whether a user has read-only or read-write permissions for the Cedar database.

Advanced Cedar security affects users with read-write permissions. It provides a finer level of control over Cedar features that can modify data. Most facilities do not use advanced Cedar security.

SQL Server enforces basic security at the database level. Advanced Cedar security is enforced at the application level.

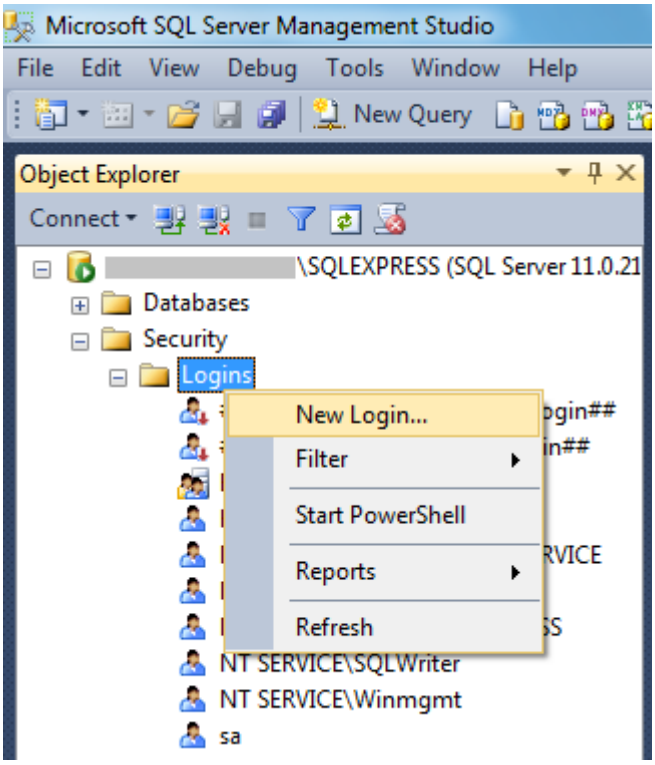
Basic Cedar Security - Create User

Basic Cedar security is configured in SQL Server Management Studio (SSMS).

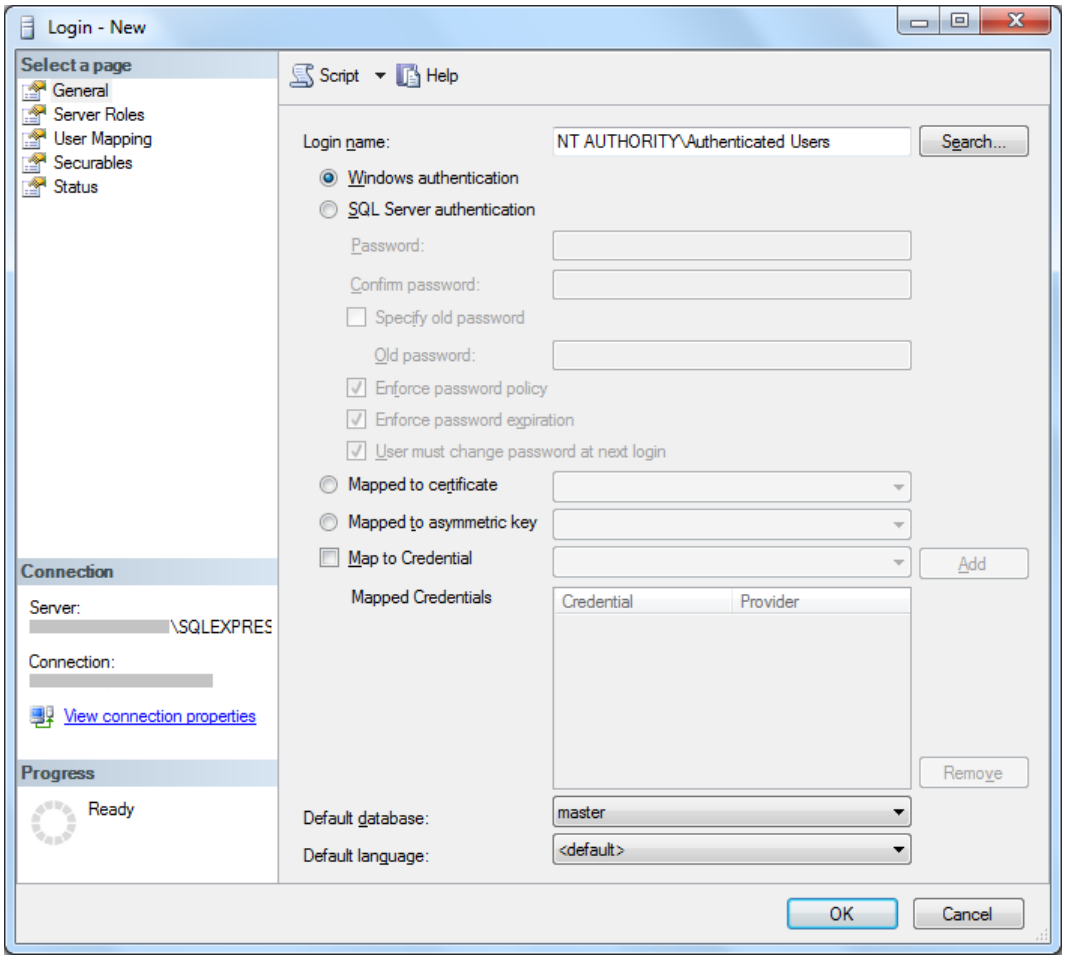
SQL Server logins typically use Windows authentication or SQL Server authentication. Windows authentication is more secure, but requires Active Directory for access from remote computers. SQL Server authentication is less secure, but access from remote computers is easier to set up. A full discussion of SQL Server login configuration is outside the scope of this manual. See Microsoft's SQL Server documentation or other resources for more information.

New SQL Server Login

To add a new user or account, navigate to Security > Logins in the SSMS Object Explorer window. Right-click on Logins and select "New Login".



The Login Properties window appears.

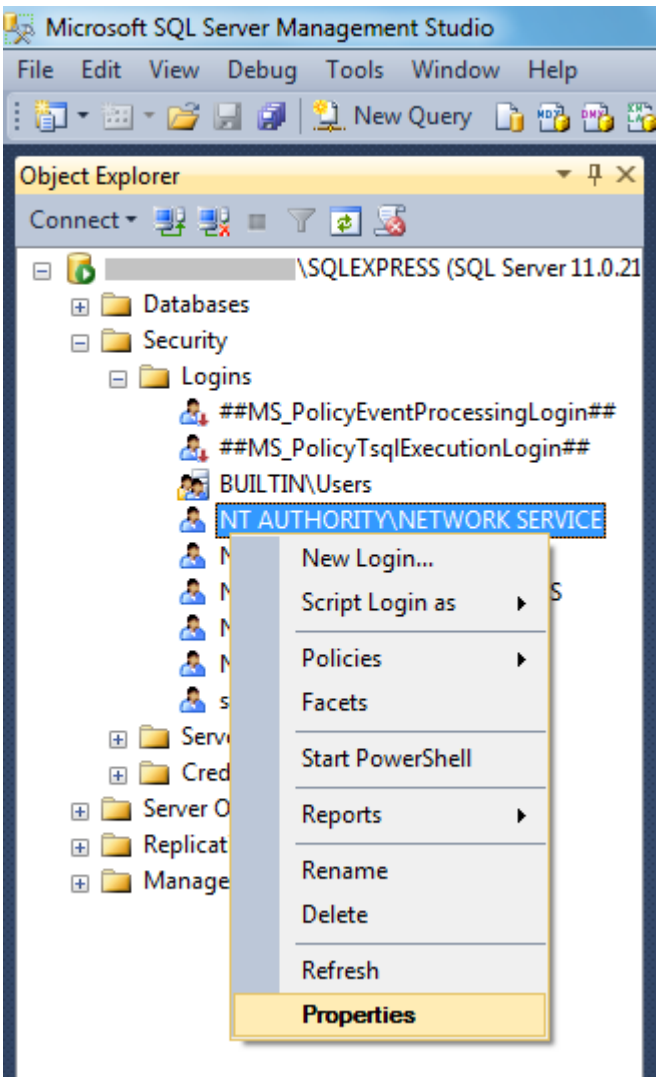


For Windows authentication, select the account or group. For SQL Server authentication, enter the name and password for the new login.

In the Login Properties window, configure the user mapping (see below).

Existing SQL Server Login

To configure basic Cedar security for an account or group that has an existing SQL Server login, locate the login under Security > Logins in the SSMS Object Explorer window. Right-click on the login name and select "Properties".



The Login Properties window appears. Configure the user mapping.

Configure SQL Server Login: User Mapping

Use the Login Properties window to map a login to the predefined Database Roles.

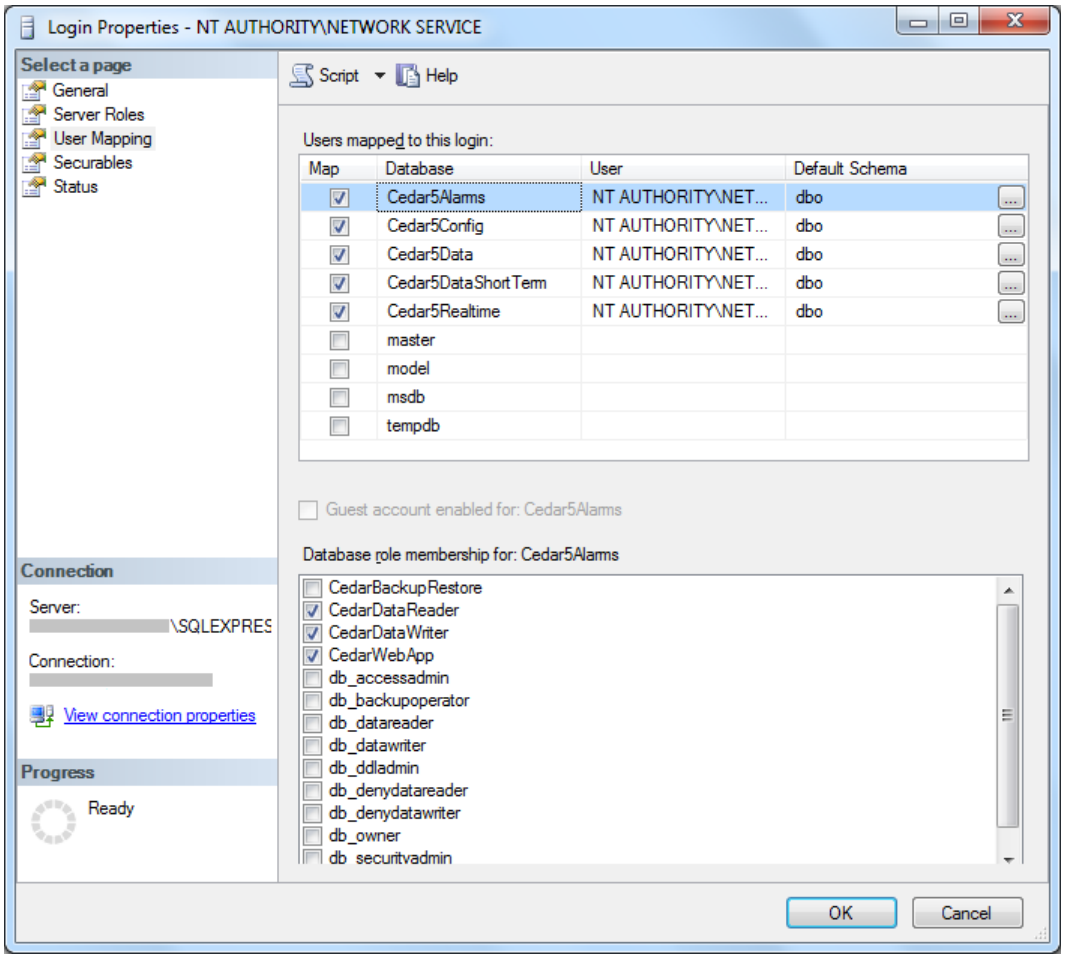
1. Select User Mapping on the left.

2. Select the Cedar database, such as Cedar5Alarms.

3. Check the database role membership boxes to assign database roles to the login.

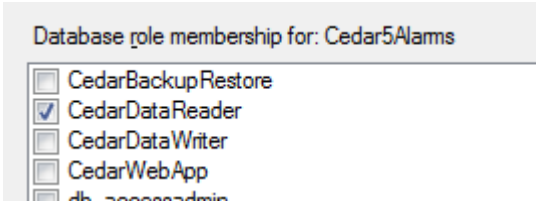
4. Repeat steps 2 and 3 for each Cedar database.

5. Click OK to save the changes.



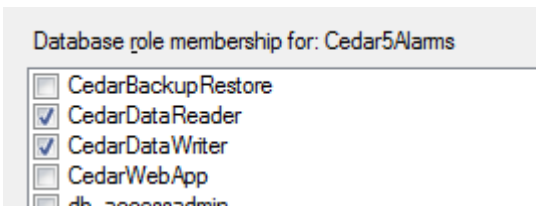
Read-only User

For a read-only user, assign only the CedarDataReader role to the login. Do this for each of the Cedar databases.



Read-write User

For a read-write user, assign the CedarDataReader and CedarDataWriter roles to the login. Do this for each of the Cedar databases.



Basic Cedar Security - Database Roles

Database roles define a set of permissions which can easily be applied to logins in SQL Server Management Studio (SSMS).

Cedar defines the following database roles. Some databases do not define all these roles.

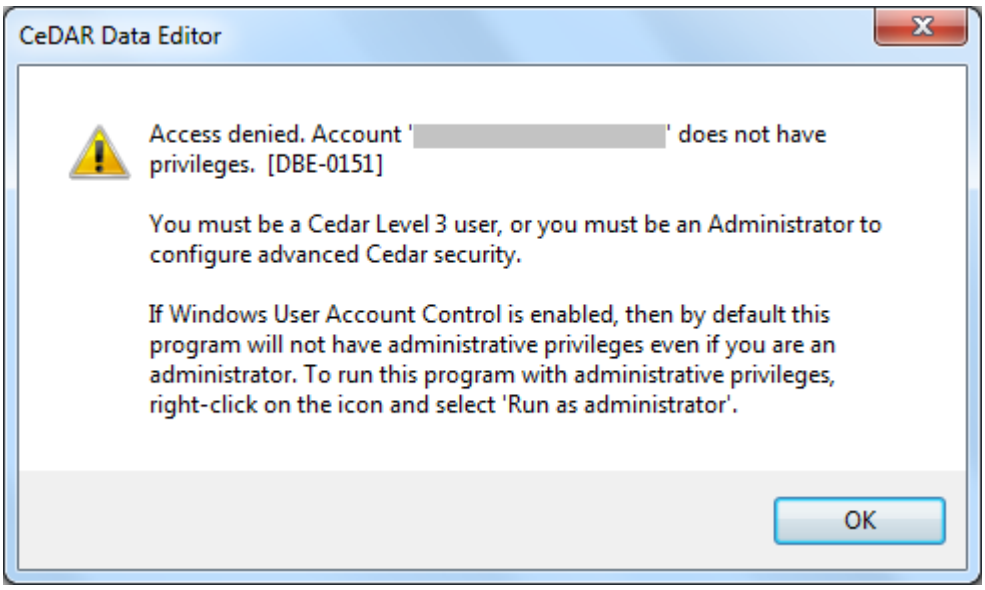
Role	Description
CedarDataReader	Defines read permissions for the database. This role is used for both "read-only" and "read-write" users. This role allows "read-only" users to acknowledge alarms, but not to write or modify any other data.
CedarDataWriter	Defines write permissions for the database. This role is used for "read-write" users. This role is required for all users that will write or modify Cedar data.
CedarBackupRestore	Defines additional permissions required for restoring backup data, merging extracted data, and/or purging old data.
CedarWebApp	Is used for Cedar web applications. This database role is needed for the account which runs the IIS web site. This role is not used for typical user accounts.

Advanced Cedar Security - Accounts

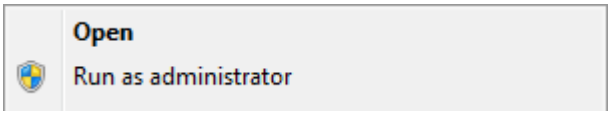
To configure advanced Cedar security, open the Cedar Data Editor, and click File > Security Setup > Accounts.

First time configuration

To configure advanced Cedar security for the first time, the Cedar Data Editor must run with administrative privileges. You may see this message box.

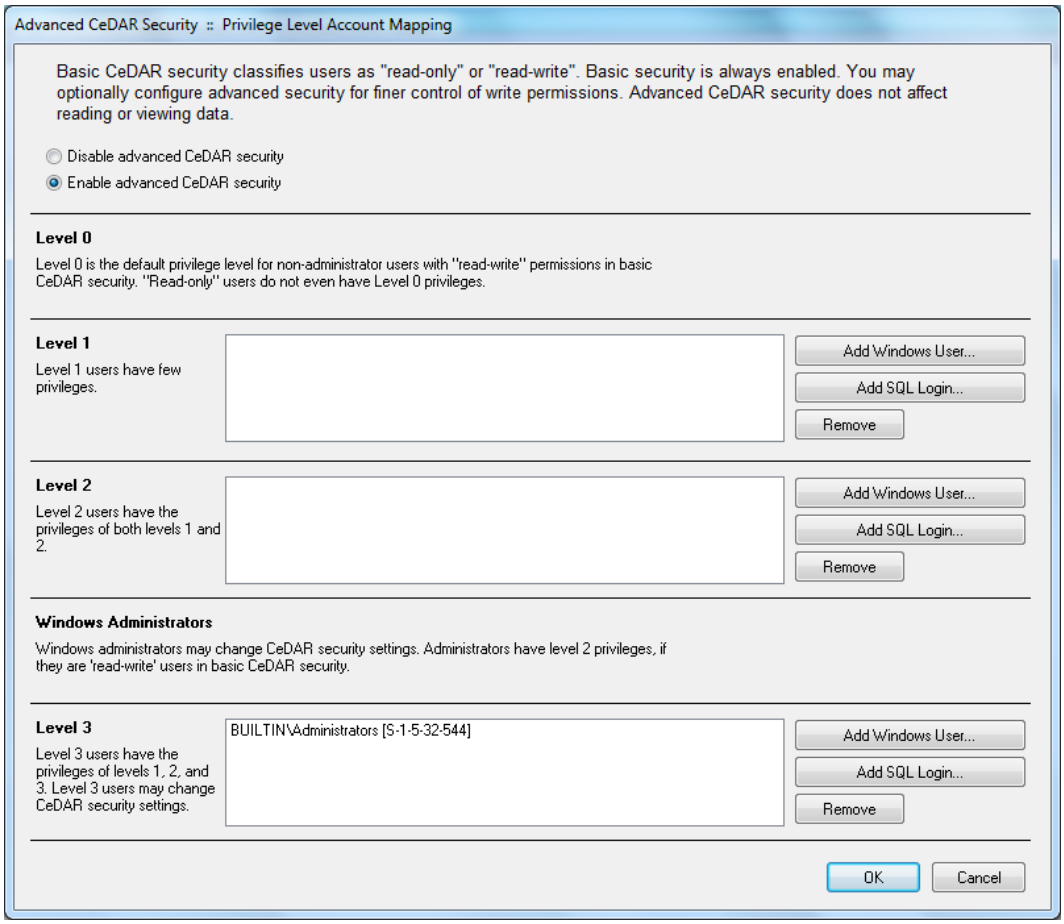


Close the Cedar Data Editor. Right-click on the Cedar Data Editor icon, and click "Run as administrator".



Now you can configure advanced Cedar security.

In the Cedar Data Editor menu, click File > Security Setup > Accounts. This window appears:



Advanced Cedar security is disabled by default. (Basic Cedar security is always enabled and cannot be disabled.) Select the "Enable" option to enable advanced Cedar security.

Privilege levels

Advanced Cedar security defines four privilege levels. Level 0 has the least privileges, and Level 3 has the most. Each privilege level has all the permissions of the lower level, plus any privileges defined for its level. Only Level 3 users and Windows administrators may change the advanced Cedar security settings.

Non-administrative users are assumed to be in Level 0 unless they have been assigned to a higher level. Level 0 read-write users are allowed to utilize Cedar features for which no minimum privilege level has been selected.

Windows administrators have Level 2 permissions by default, plus they can change the advanced Cedar security settings. Windows administrators may optionally be assigned to Level 3.

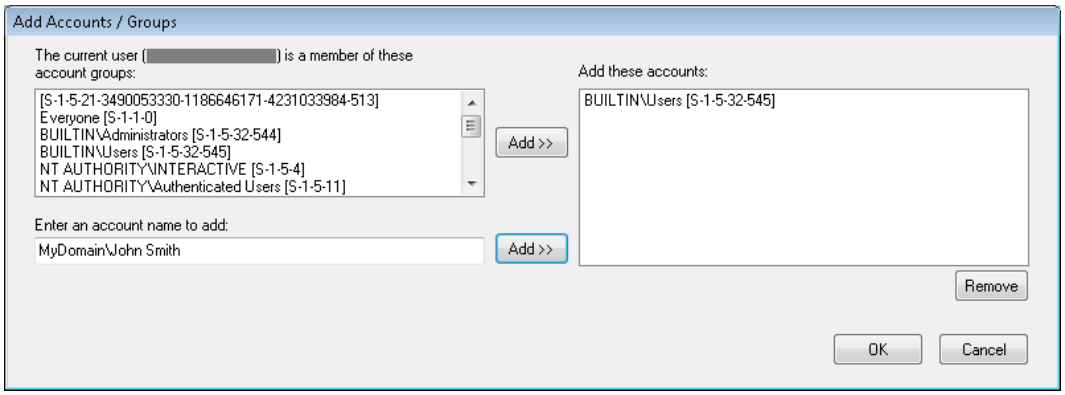
Recommended configuration

For Active Directory accounts, CiSCO's recommendation is to create an Active Directory group for each privilege level. For example, create three groups named "Cedar Level 1", "Cedar Level 2", and "Cedar Level 3". Assign the Active Directory groups to their appropriate privilege levels in this Cedar window. Then add individual users to the appropriate groups in Active Directory.

SQL logins cannot be managed by groups, so each individual read-write SQL login must be assigned to a privilege level in this window.

Windows user accounts

To add a Windows or Active Directory user or user group to a Cedar privilege level, click the "Add Windows User" button. This window appears.



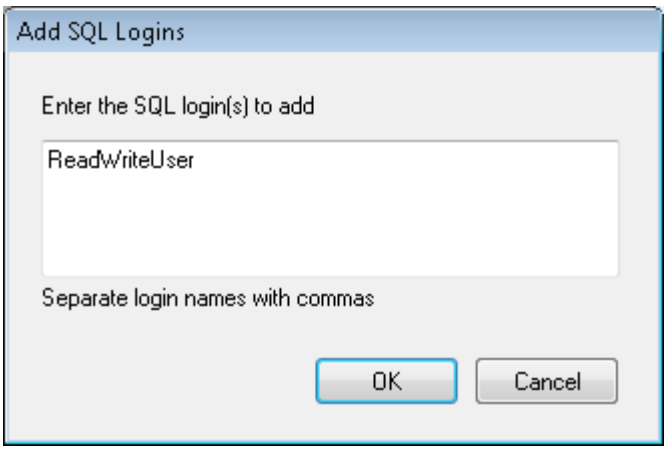
The upper left box displays a partial list of existing groups. Click the Add button to add an existing group to the box on the right.

You can enter the name of any account or group in the lower left box, and click Add to add it to the box on the right.

When you click OK, the account(s) and group(s) that are listed in the box on the right will be added to the privilege level.

SQL Logins

To add a SQL Server login to a Cedar privilege level, click the "Add SQL Login" button. This window appears.



Enter the SQL Server logins. Separate multiple logins with commas.

When you click OK, the login(s) will be added to the privilege level.

Permissions

After advanced Cedar security has been enabled and user accounts have been assigned to privilege levels, you can set permissions for the privilege levels.

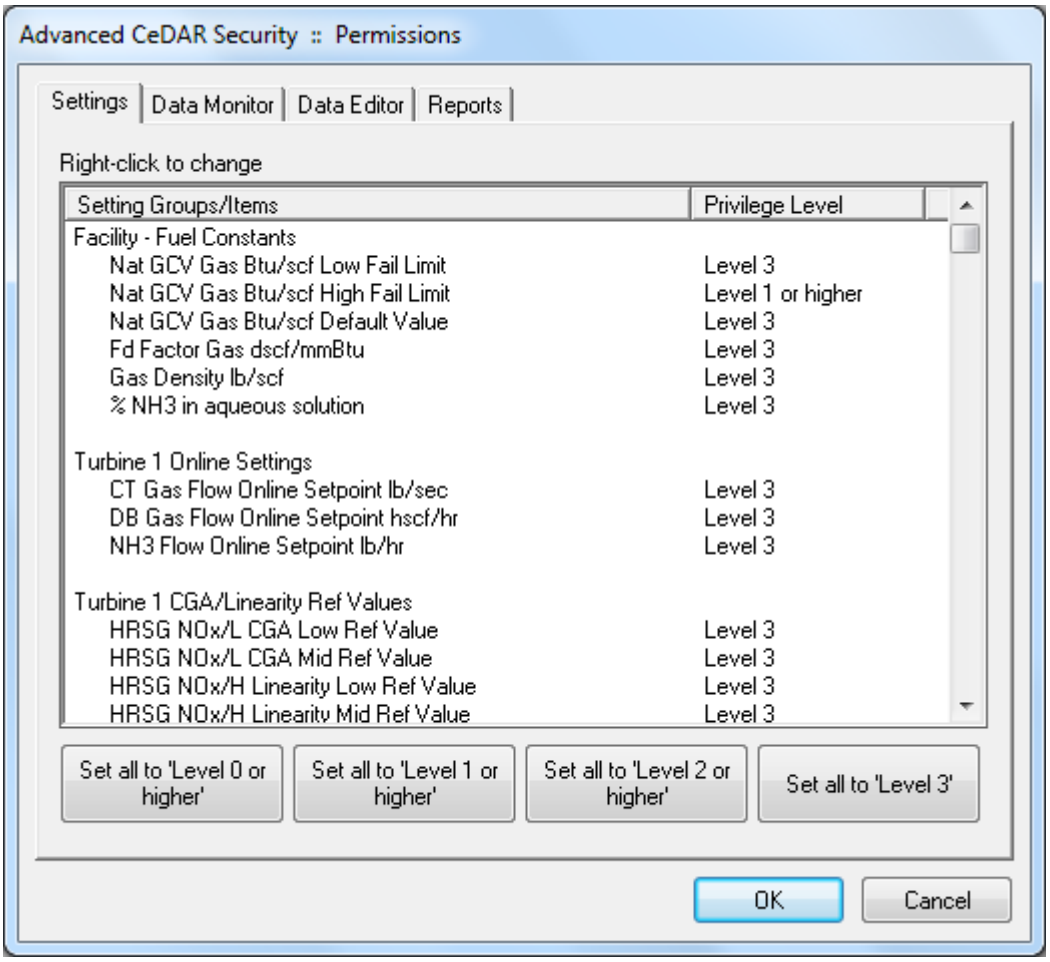
Advanced Cedar Security - Permissions

To configure advanced Cedar security, open the Cedar Data Editor, and click File > Security Setup > Permissions. The Permissions menu item is disabled when advanced Cedar security is not enabled. Use the Accounts window to enable advanced Cedar security, and then the Permissions window will be enabled. The Permissions window may take a minute to appear while it loads the Cedar configuration.

The Permissions window lists many operations that can change data or settings within Cedar. You can configure the minimum privilege level required for these operations.

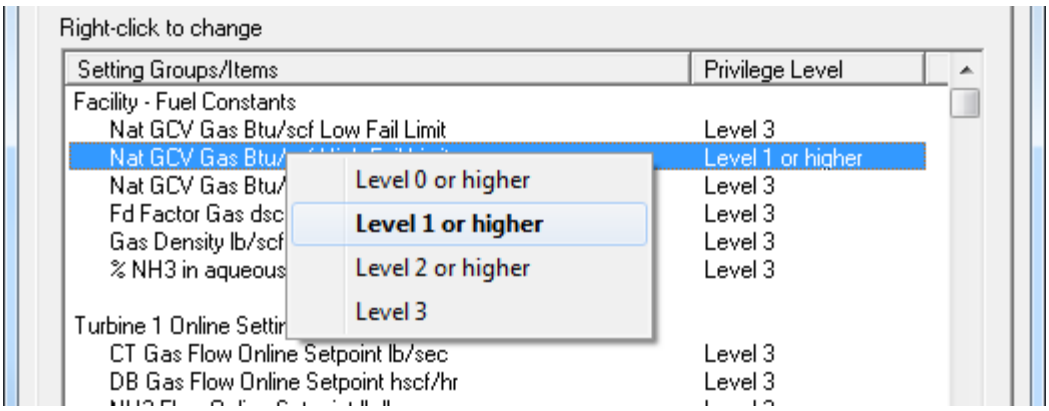
Settings

The minimum privilege level can be set for each individual setting.



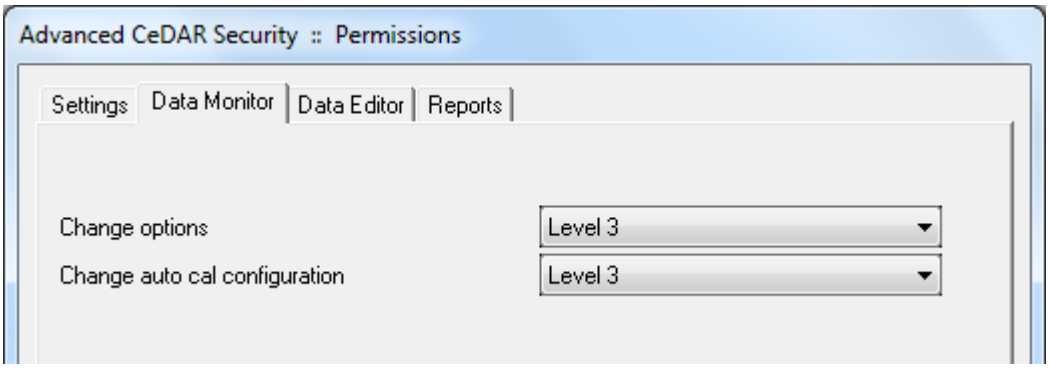
Click one of the "Set All" buttons to set the minimum privilege level for all settings.

Right-click on a setting to select the minimum privilege level.



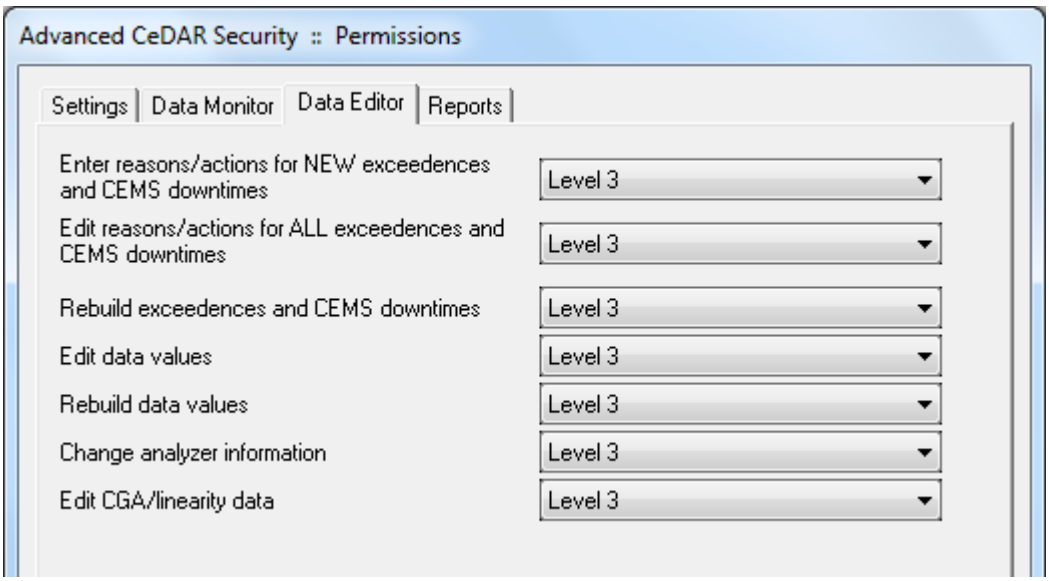
Data Monitor

These items apply to the Cedar Data Monitor.



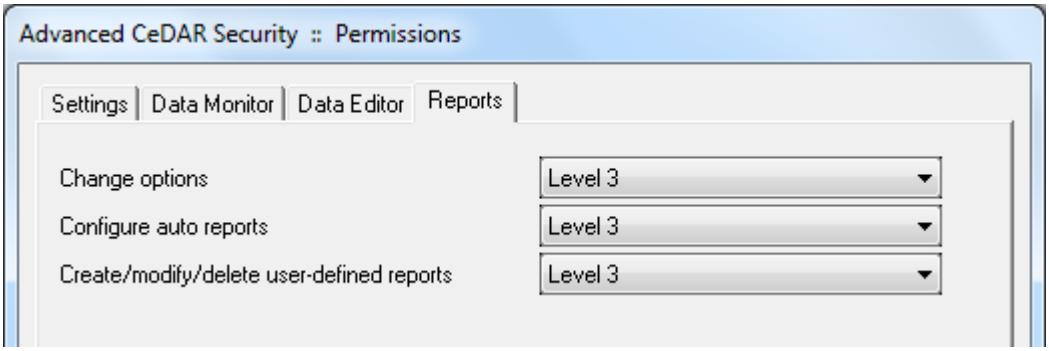
Data Editor

These items apply to the Cedar Data Editor.



Report Generator

These items apply to the Cedar Report Generator.



Delete User

To delete a user, follow these steps:

1. Delete the SQL Server login.

2. Delete the user from each SQL Server Cedar database.

3. If advanced Cedar security is enabled, remove the user from any Cedar privilege levels.

Delete SQL Server Login

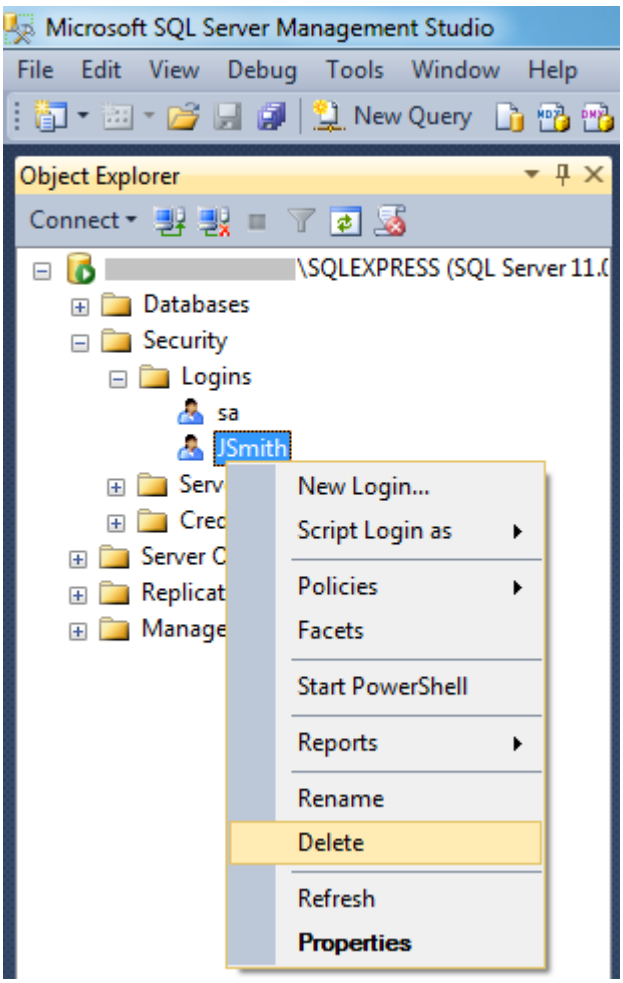
Active Directory Groups

A user may have access to Cedar because the user is a member of an Active Directory group. A SQL Server login is defined for the group rather than for the individual user.

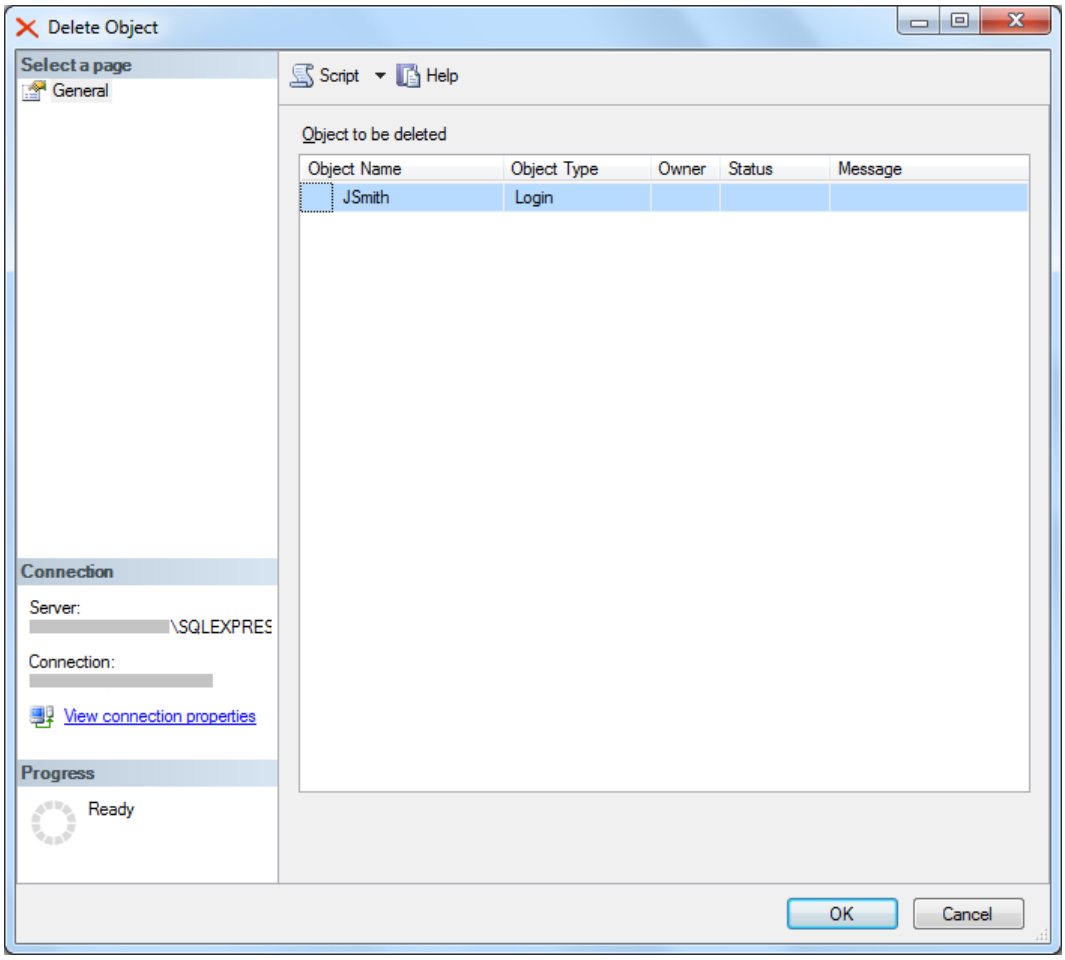
If this is the case, delete the user from the Active Directory group and ignore this step.

Open SQL Server Management Studio (SSMS).

To delete an existing login, navigate to Security > Logins in the SSMS Object Explorer window. Right-click on the login that you want to delete.

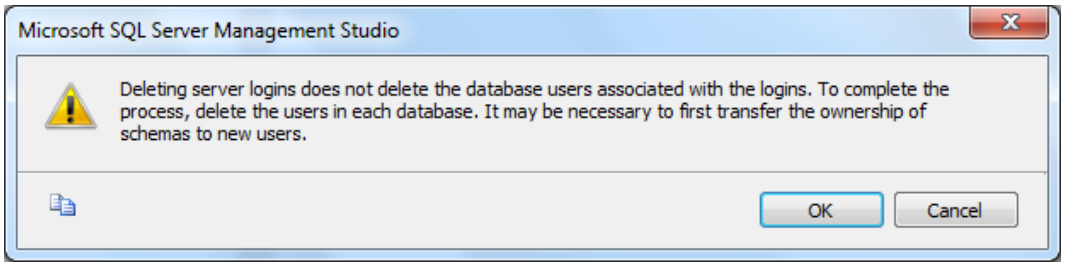


Select "Delete" from the menu. The Delete Object window appears.



Click OK.

A message box cautions that more steps are required to completely remove the user from the database.



Click OK.

SSMS deletes the login.

Note

To completely delete the user from SQL Server, the user must also be deleted in each Cedar database. Perform the following procedure for each Cedar database.

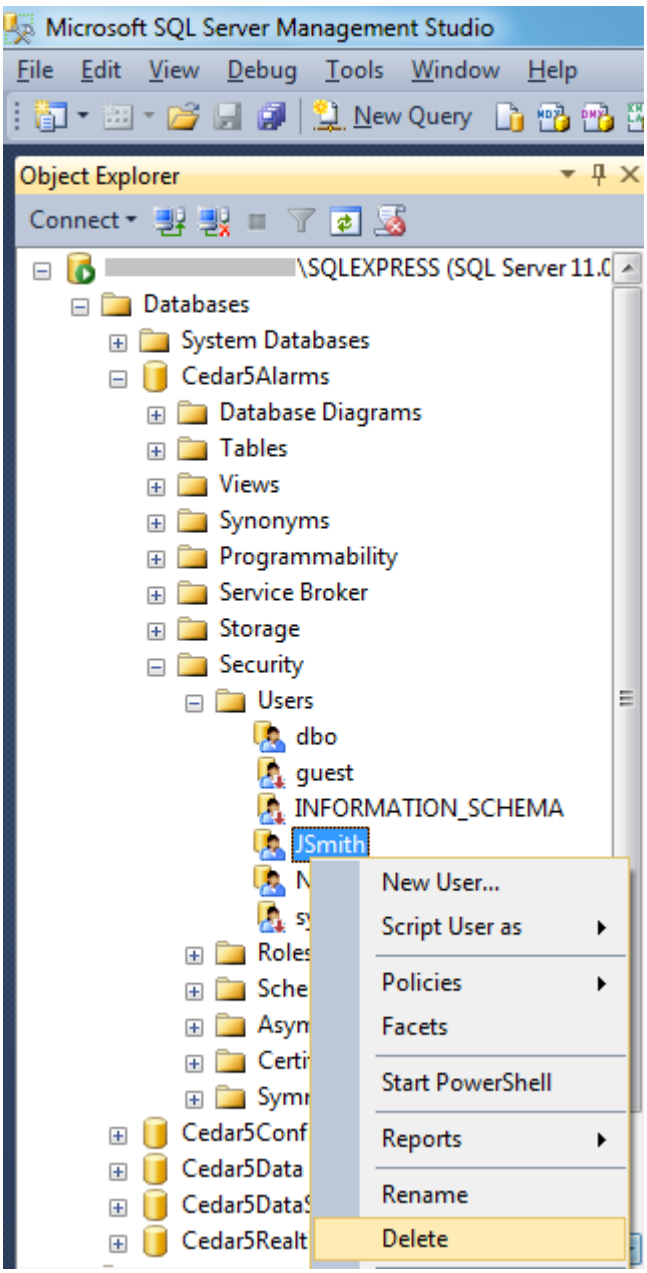
Delete User from Cedar Databases

Active Directory Groups

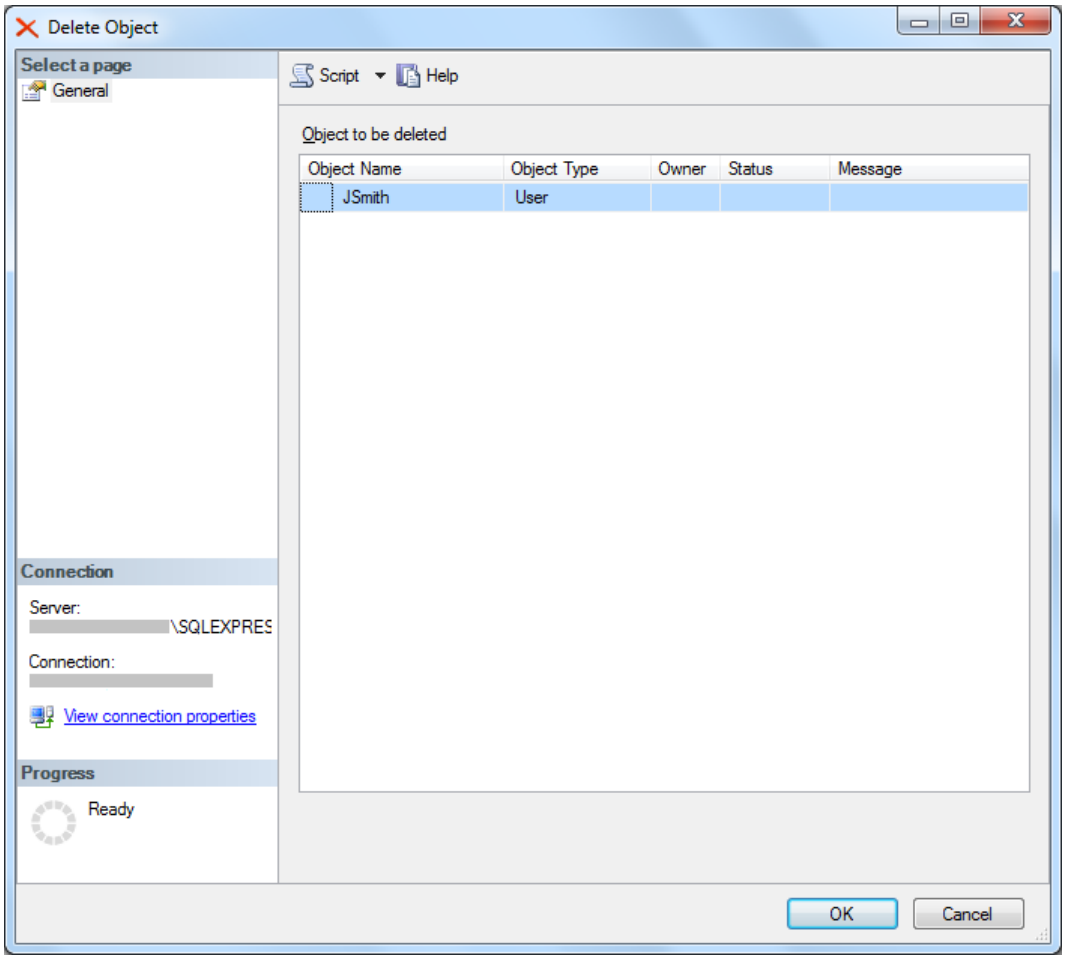
A user may have access to Cedar because the user is a member of an Active Directory group. A SQL Server login and database users are defined for the group rather than for the individual user.

If this is the case, delete the user from the Active Directory group and ignore this step.

To delete an existing user, navigate to Databases > (database name) > Security > Users in the SSMS Object Explorer window. Right-click on the user that you want to delete.



Select "Delete" from the menu. The Delete Object window appears.



Click OK.

SSMS deletes the user.

Repeat the above steps to delete the user from each Cedar database. The databases are:

- Cedar5Alarms
- Cedar5Config
- Cedar5Data
- Cedar5DataShortTerm
- Cedar5Realtime

Delete User in Advanced Cedar Security

Skip this step if advanced Cedar security is not enabled.

Active Directory Groups

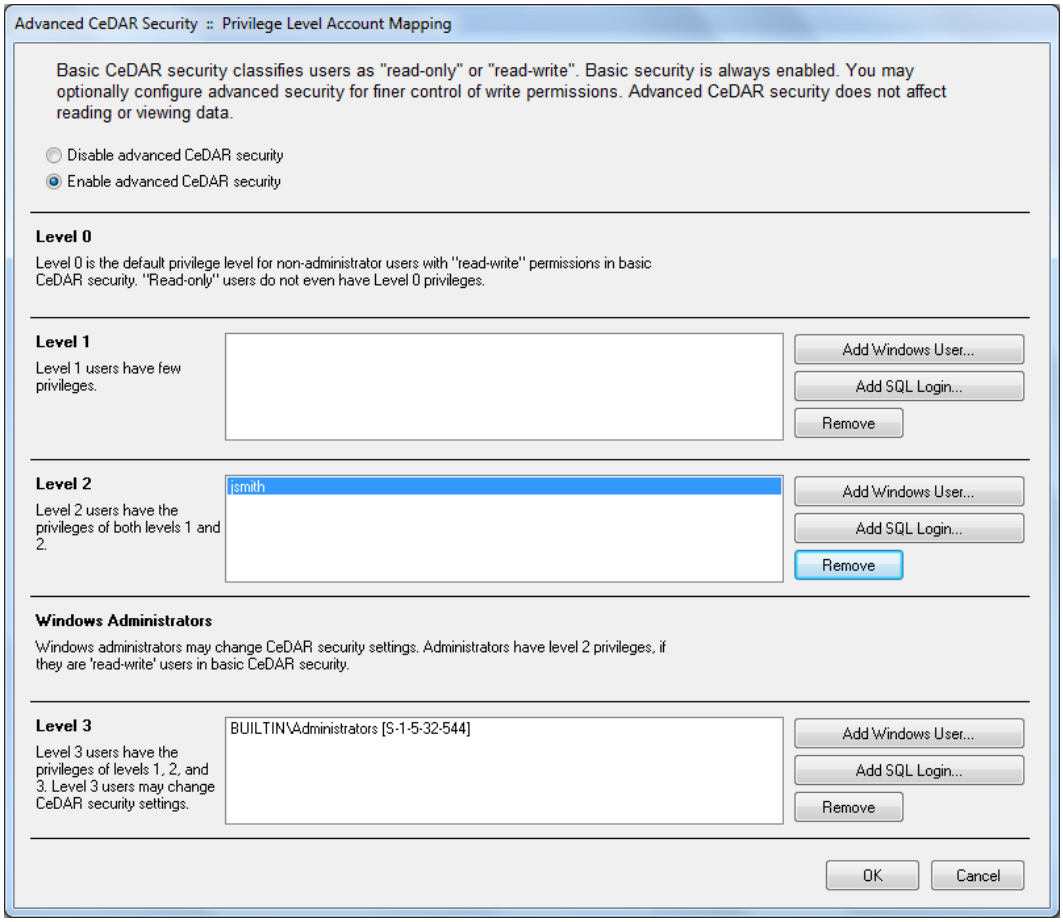
A user may have access to Cedar because the user is a member of an Active Directory group. The group may be assigned to a Cedar privilege level. The individual user is not assigned to a Cedar

privilege level.

If this is the case, delete the user from the Active Directory group and ignore this step.

Open the Cedar Data Editor.

In the Cedar Data Editor menu, click File > Security Setup > Accounts. This window appears:



Look for the user in the list for each privilege level.

Highlight the user and click Remove.

Click OK to save the changes.

Glossary

4

40 CFR 60: Part 60 of Chapter 40 of the U.S. Code of Federal Regulations. Part 60 has many detailed requirements for monitoring, handling, and reporting air emissions data.

40 CFR 75: Part 75 of Chapter 40 of the U.S. Code of Federal Regulations. Part 75 has many detailed requirements for monitoring, handling, and reporting air emissions data.

40 CFR 98: Part 98 of Chapter 40 of the U.S. Code of Federal Regulations. Part 98 has many detailed requirements for monitoring, handling, and reporting greenhouse gas emissions data.

C

CEM: Continuous Emission Monitor. CEM and CEMS are often used interchangeably.

CEMS: Continuous Emission Monitoring System. CEM and CEMS are often used interchangeably.

CEMS Downtime: CEMS downtime occurs when an emissions monitoring system or other monitor is not operating or collecting valid data.

CGA: Cylinder Gas Audit. A quarterly test required by 40 CFR 60 for many gas monitoring systems. Typically requires 3 injections of 2 reference gases. Is similar to a Linearity Check.

CGT: Cylinder Gas Test. Specified by Environment Canada, Report EPS 1/PG/7. Is similar to a linearity check.

CO: Carbon monoxide.

CO2: Carbon dioxide.

D

DAHS: Data Acquisition and Handling System. This term is defined by Part 75 to include software that substitutes missing data according to the Part 75 routines.

DAS: Data Acquistion System. The combination of a computer and software that acquires data from measurement systems.

E

EPA: See USEPA.

Exceedence: See Excess Emission.

Excess Emission: An Excess Emission occurs when a source exceeds a permit limit.

G

GHG: Greenhouse Gas. Many gases contribute to the global "greenhouse effect". Common GHGs include CO2 (carbon dioxide), CH4 (methane), and N2O (nitrous oxide).

H

HDR: Historical Data Retrieval. A CEMS PLC may store backup averages, which allows the DAS to acquire data for short periods when the DAS is not running.

Hg: Mercury.

L

Linearity Check: A quarterly test required by 40 CFR 75 for many gas monitoring systems. Typically requires 3 injections of 3 reference gases. Is similar to a Cylinder Gas Audit.

M

MER: Maximum Emission Rate. Is defined in a 40 CFR 75 monitoring plan.

Monitor Code: A Cedar monitor code indicates the validity of a data point.

Monitor Downtime: See CEMS Downtime.

MPC: Maximum Potential Concentration. Is defined in a 40 CFR 75 monitoring plan.

N

NH3: Ammonia. Is commonly used to control NOx emissions.

NOx: Oxides of nitrogen. Includes NO and NO2.

O

O2: Oxygen.

Opacity Calibration Error Check: A quarterly test for opacity monitors specified in 40 CFR 60 Appendix B Performance Specification 1. Has 3-5 runs for each of 3 reference values. Is similar to a Linearity Check.

P

Part 60: See 40 CFR 60.

Part 75: See 40 CFR 75.

PLC: Programmable Logic Controller, often used to control CEMS hardware and provide data to a DAS.

PM: Particulate matter.

PM10: Particulate matter, with a nominal diameter of 10 microns.

PM2.5: Particulate matter, with a nominal diameter of 2.5 microns.

PPM: Parts per million. 1 percent = 10,000 ppm.

Process Code: A process code indicates the state of the process relative to certain permit conditions. Typical process codes are: Unit Offline, Startup, Shutdown, and Normal Operation.

R

RATA: Relative Accuracy Test Audit. Compares the CEMS emission data against emission data from a "reference method". Is typically performed by a third-party test team. Is commonly performed on an annual basis, but shorter and longer intervals are possible.

Report EPS 1/PG/7 (Revised): CEMS requirements for Environment Canada, titled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation".

S

SCAQMD: South Coast Air Quality Management District is the agency responsible for managing air pollution in the greater Los Angeles, California area.

SCR: Selective catalytic reduction (SCR) is a means of controlling NOx emissions with the aid of a catalyst by injecting ammonia or urea into a stream of exhaust gas.

SNCR: Selective non-catalytic reduction (SNCR) is a means of controlling NOx emissions in solid-fuel power plants by injecting ammonia or urea into a stream of exhaust gas, without the aid of a catalyst.

SO2: Sulfur dioxide.

U

USEPA: United States Environmental Protection Agency.